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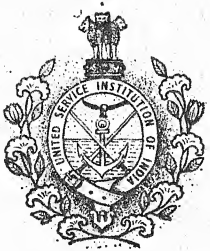

PRINCIPAL CONTENTS

JULY-SEPTEMBER 1974

UNITED SERVICE INSTITUTION OF INDIA

CORRESPONDENCE COURSES FOR ARMY OFFICERS PROMOTION EXAMINATION PART 'D' AND DSSC ENTRANCE EXAMINATION—1975

Courses

The next USI Correspondence Courses to prepare Army Officers for Part 'D' Promotion Examination to be held in Oct. 75 and Feb. 76 and DSSC entrance examination to be held in Nov. 75 will commence as shown below:—

(a) Part 'D' — 10 Feb. 1975.
(b) DSSC — 01 Feb. 1975.

The subject covered by the courses will be the same as for the respective examination. The institution has no coaching facilities for the special to corps papers.

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	For all subjects	*For each subject*
(a) Part 'D' (five subjects)	Rs. 240/-	Rs. 60/-
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3. Only members of the Institution can join the courses. Non-member officers can also join by becoming members. They will have to pay Rs. 35/- more; Rs. 20/- as admission fee and Rs. 15/- as membership subscription for the calendar year 1975. The membership subscription is renewable in January each year.

4. Officers who become members of the Institution some time back but have not been regular in paying the annual subscription can also renew their membership by paying the subscription for the intervening year at the rate of Rs. 10/- per calendar year upto and including 1974. For 1975 the membership subscription is Rs. 15/-.

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(a) USI membership number, if already a member.
(b) IC Number.
(c) Rank
(d) Name.
(e) Unit.
(f) Address at which the course material is required to be sent.

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7. Application for admission will be entertained till end of April 75 or till the vacancies are filled whichever is earlier.

8. All applications must be accompanied by crossed cheques for the amount as applicable made in favour of Secretary, United Service Institution of India. Outstation cheques, other than those on the State Bank of India, should also include bank collecting charges of Rs. 2/-. Part payments will not be accepted.

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UNITED SERVICE INSTITUTION OF INDIA

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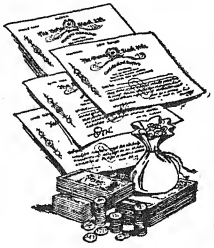
When several thousand countrymen put their savings in your business, it's called trust.



It goes back a long way—to a time when the Tata Iron and Steel Company was being formed. Thousands of people, "some with stools and lunch boxes" lined up outside the Tata office to buy shares in the new Company. Rich and poor alike subscribed.

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THE SUEZ CROSSINGS

MAJOR GENERAL S K SINHA, PVSM

THE Sinai desert is one of the most ancient battlefields of history. The armies of all great conquering nations of their time—Asyrian, Egyptian, Persian, Macedonian, Arab, Turk and British—have tramped across the sands of this desert. Great captains of war like Alexander, Caeser and Napoleon have campaigned here. The Indian Army has also operated in this theatre, in the two World Wars. During the first World War, 10 and 11 Indian Divisions successfully held the West bank of the Suez Canal against the Turks. Allenby's subsequent advance to Alleppo from the Canal was conducted by a largely Indian force.

The most recent war of history was fought in October 1973 in the Sinai. We would do well to observe Bismarck's famous dictum of learning from the expetience of others. A study of this latest conflict, fought with some new weaponry in an area so heavily laden with history, is a rewarding endeavour for a student of military affairs.

THE SUEZ CANAL

This Canal was first built in the 20th or the 19th century BC by the Phaorahs of Egypt, linking the Mediterranean with the Red Sea in the area of Lake Timsah. When the Red Sea receded, Xerxes extended the Canal to Suez. After nearly 3000 years, the Canal fell into disuse in the 8th century AD. A further 1000 years later, a Frenchman, Ferdinand de Lesseps, rebuilt the Canal in 1869. For the next 100 years, this Canal became the most important waterway for international commerce till it was closed in 1967 as a result of the third Arab-Israel War.

Since 1967, opposing Egyptian and Israeli Armies had been holding positions on either bank of the Canal. This period of uneasy truce was punctuated by frequent skirmishes and raids. The Canal is a formidable military obstacle. Extending across 107 miles from Port Said to Suez, it passes through Lake Timsah and Great Bitter Lake. It is 42 feet deep and 500 to 600 feet wide. The embankments on either side of the Canal are 30 to 60 fect above the water level.

ISRAELI DEFENCE PLANS

It had become increasingly apparent that despite UN Security Council Resolution No 242, the Israelis were in no mood to give up their

hold over the Sinai. New Israeli settlements known as kibutz started coming up and a formidable obstacle belt was constructed on the West bank of the Canal, called the Bar Lev Line. According to Russian estimates, this line cost the Israelis 236 million US dollars. It consisted of a cluster of 100 concrete bunkers with 30 feet of overhead cover packed with granite blocks and earth. The bunkers were protected with extensive minefields and there were underground pipes for spraying napalm-like liquid on the Canal to set crossing sites ablaze.

Israeli defence plans catered for holding the Bar Lev Line thinly and for having an armoured counter-attack force in reserve at Ismaila, Gidi and Milta Passes. As per one estimate, they had two brigades plus (8000 troops) holding the Bar Lev Line and two armoured brigades in reserve for counter-attack. They believed that the Egyptians were not capable of effecting a crossing of the Canal. In the unlikely event of the Egyptians securing a foothold on the East bank, they felt that they would require a minimum of 48 hours to consolidate their position. This would allow sufficient time to call up Israeli reserves numbering over 200,000. Moreover, during this period while the Egyptians would be consolidating their position, the superior Israeli Air Force was to launch an all-out attack to knock off bridges on the Canal and generally make the bridgehead untenable. This was to be combined with armoured counter-attack from the area of the Passes to throw the Egyptians back into the Canal.

The Egyptian Offensive

President Sadat of Egypt had been repeatedly threatening operations for regaining lost Egyptian territory in the Sinai. Over the years, these threats began to be taken as mere political gestures without any military content in them. The Egyptian Army had carried out several training manoeuvres in the area west of the Canal in the past few years. Thus, even a large concentration of Egyptian troops in the area was liable to be taken as a routine training activity.

The Egyptians felt that the prevailing atmosphere of detente between the USA and the USSR would only help in preserving the status quo in the Sinai and this was unfair to them. Therefore, they decided to start operations with a view to breaking the deadlock and focussing the attention of the world community on the continued Israeli occupation of the Sinai. Being aware of the fighting capabilities of the Israeli Armed Forces, particularly their Air Force and their Tank Corps, the Egyptians chose a limited objective. They planned to establish strong bridgeheads across the Canal, avoiding to present exposed flanks to the manoeuvre-

oriented Israeli armoured forces. The Israelis would be forced to launch frontal attacks which the Egyptians felt they could contain. They expected that this would lead to protracted operations. A long-drawn-out war would not suit the Israelis because the bulk of their Armed Forces are reserves drawn from civil life.

A significant aspect of Egyptian preparations for war was the setting up of an air defence command based on a network of surface-to-air missiles and ZSU 23/4 air defence guns. The former known as SAMs were of four different types. The relatively static SAM-2 and SAM-3, which fire two-stage guided missiles propelled by solid fuel, had been employed in Viet Nam but the mobile SAM-6 and SAM-7 were completely new weapons which had not previously been used in any operations. SAM-6 is carried on tracked vehicles and SAM-7 is a bazooka-style weapon which can be fired from the shoulder. These are very effective against low-flying aircraft, particularly when no electronic counter-measures have been developed against them. With all these SAMs, the Egyptians built a formidable missile shield extending upto about 20 miles east of the Canal.

By October 1973, the Egyptians concentrated their Second and Third Armies consisting of four infantry divisions and two armoured brigades plus a few independent tank battalions and some commando battalions. These troops carried out extensive training of crossing the Nile canals. This concentration was not taken seriously by the Israelis. They considered it to be a routine training manoeuvre. Even when warned about it by American intelligence, they did not attach much importance to it. Based on its remarkable achievements in the past, Israeli intelligence had become overconfident about its abilities and its assessments.

The Egyptians had carried out meticulous planning for their offensive. They chose to attack during Ramzan on 6th October 1973 which was the Israeli Yom Kippur day. They felt that this would ensure maximum surprise and in the event their assessment proved very correct. The previous night Egyptian frogmen swam underwater across the Canal and planted dynamite charges on the eastern bank. These charges were also placed at corresponding points on the home bank. At 2 p.m. on 6 October 1973, the Egyptians opened a heavy artillery barrage on the eastern bank which set off the dynamite charges blowing gaps in the embankments. Gaps were also simultaneously blown in the embankments on the home bank. Synchronising with the heavy artillery concentrations, heliborne commando troops were landed in an area immediately east of the Bar Lev Line. They succeeded in neutralizing some of the devices with which

the Israelies had hoped to set the crossing sites abalze. Concurrently, four infantry divisions on a wide front from El Kantara to Suez started crossing the Canal in assault boats. They were soon storming the Bar Lev Line defences and overwhelming the defenders who were stunned by the speed and violence of the attack. Thus, the Egyptians succeeded in achieving complete strategic and tactical surprise. Closely behind the infantry assault, construction of ferries and pontoon bridges, commenced. Fifty ferries and ten pontoon bridges were constructed, the latter being completed in about six hours. By first light on 7 October, the Egyptians had a sizeable force with armour across the Canal and during a couple of days had some 70,000 troops and 800 tanks in the bridgehead extending to a depth of 15 to 20 kilometers. This spectacular build-up was possible because of meticulous planning, large-scale bridging/rafting and very efficient control of movement. The Egyptians were also very prompt in digging and preparing their defences in their bridghead to meet the inevitable Israeli counter-attack.

Although surprised, the Israelis reacted sharply to the Egyptian crossing of the Canal. The Israeli Air Force went into action in an all-out bid to knock off the Egyptian Air Force and to destroy the bridges over the Canal. The Egytians had anticipated this and had taken elaborate precautions. Their Air Force was widely dispersed in different airfields and a large portion of it had been sent to Libya. Air defence of the airfields with captive balloons and surface-to-air missiles had been organised. As regards the bridges on the Canal, apart from protecting them with an effective missile shield, the Egyptians had catered for dummy bridges and a thick smoke screen with vessels in the canal belching smoke. The Israeli Air Force failed to make much impression against the effective air defence arranged by the Egyptians. Three out of every five Israeli aircraft operating in this area were knocked out, mostly by SAM-6. In the first couple of days, the Israelis lost some 100 aircraft representing over one fourth of the combat strength of their Air Force.

Israeli Counter-Attacks

The Israelis also launched a counter-attack against the Egyptian bridgeheads with two armoured bridges from the area of the Passes. These frontal counter-attacks were beaten by the Egyptians from their newely prepared defensive positions. Denied effective air support and the opportunity to exploit their superiority in mobile warfare, the Israelis suffered some 200 tank casualties, mostly to anti-tank missiles. The Soviet-made Sagger and Snapper missiles took a heavy toll of the Israeli armour. Major General Aluf Mendler, Commander of Israeli Armoured Formations in the Sinai, was killed and Colonel Yakouri, Commander of the Israeli 190

Armoured Brigade, with twenty-five running tanks, was taken prisoner. By 10 October, the Egyptians had beaten back the counter-attacks and the Israelis withdrew from the vicinity of the Canal completely abandoning the Bar Lev Line. So far everything had gone according to plan for the Egyptians and their Chief of Staff, Lt Gen Shazly, was being widely acclaimed as the two-eyed Dayan. However, the Egyptians had suffered a mishap on 7 October, when they mounted a large-scale heliborne raid with their commandos against Balzna, astride the coast in the North and Bir Gifgafa, the main Israeli base in the Sinai. The Egyptians paid heavily for sending their helicopters in an area where Israeli Air Power was unchallenged. All helicopters were shot down and most of the Commandos were killed.

The Israelis mobilised their reserves and rushed reinforcements to the Sinai while the Egyptians, after beating back the counter-attacks, indulged in overcautious consolidation. In the process, the Egyptians lost a golden opportunity of breaking out from their bridgehead and securing the three passes in the east, while the Israelis were still off balance. It appears that they were unduly influenced by Soviet tactical thinking which stipulates careful consolidation of ground captured before further advance. It is no doubt true that the initial Egyptian plan was limited in scope and had visualised only securing of a bridgehead on the East bank. However, when circumstances were favourable they modified this stance and did try to break out but, unfortunately for them, their attempt was belated. The Israelis had by now built up their strength, both with massive airlift of military equipment provided by the USA and with the move of their reserves to the Sinai. On 14th October, the Egyptians, breaking out of their bridgehead and advancing beyond the cover of their missile shield, found themselves outmanoeuvred both in the air and on the ground by the Israelis. Fierce tank battles raged for two days and the Egyptians lost some 400 tanks. They were forced to withdraw to their bridgeheads.

The Israeli Counter-Offensive

The Israelis had contingency plan for crossing over to the West bank of the Canal and they now set about executing it in the wake of their successfully thwarting the Egyptian attempts at a break-out. Israeli intelligence had located the boundary between the Egyptian Second and Third Armies which was lightly held by units of Palestine Liberation Army and some Kuwaitis and Moroccans. It appears that the Egyptians had discounted any Israeli attempt to cross the canal in the area of the lakes and had therefore neglected their defences in this area.

Major General Sharon's troops advanced from El Tassa to the

Canal bank through the boundary of the Egyptian Armies on the night of 15/16 October. An Israeli raiding column of a tank battalion group got across the Great Bitter Lake to Deverseir. PT 76 tanks with Arabic markings captured in the 1967 War floated across the 12-kilometer-wide lake. Arabic-speaking Israeli troops with the raiding column spread considerable confusion. The Egyptians had no organised defences on the West bank of the Canal in this area. The Israeli tanks went on the rampage knocking off SAM batteries and dealing with the local militia and administrative troops. Initially, the object of this raid was only to capture some SAM-6 batteries so that electronic counter-measures could be developed against them. However, seeing the success of this raid, the Israelis soon converted it into a counter-offensive. For some inexplicable reason, the Egyptian General Staff failed to react to this threat for 48 hours. Thus by 17 October, the Israelis had constructed three bridges, immediately North of Great Bitter Lake and had got a force of 15,000 troops and 250 tanks across. Helicopters, and possibly also hovercraft, were used to effect a speedy build-up.

The Israeils tore an eight-mile gap into the Egyptian missile grid and into this gap poured their Air Force and helicopters. The latter were equipped with air-to-surface televised missiles, the American Mavericks. The Egyptian MIGs, which had hitherto been held back, came into this area but were soon shot out of the air by the Israeli Phantoms and Skyhawks. The air-to-surface missiles took a heavy toll of Egyptian ground forces assembling to stem the Israeli advance. The Israelis soon built up their strength on the West bank to a total of 25,000 troops and 500 tanks. They raced southwards to Suez cutting off the Egyptian Third Army on the East bank of the Canal. It was at this stage that cease-fire came about, ending the fourth Arab-Israeli War.

LESSONS

No obstacle is impregnable. A determined attacker with proper planning and sound execution will always be able to breach an obstacle. In this respect, the much-vaunted Bar Lev Line was no more effective than the Maginot Line. Similarly, the formidable obstacle presented by the Canal was overcome with ease, both by the Egyptians and the Israelis.

Surprise is a pearl of great value for such operations. Both the Egyptians and the Israelis achieved complete surprise while effecting their crossing of the Canal. This only proves the validity of the Machiavelli dictum that nothing is easier to achieve than what the enemy thinks you will never attempt.

The importance of flexibility as a principle of war was demonstrated by the Egyptians failing to exploit the situation in the wake of their success against the initial Israeli counter-attacks. Conversely, the Israelis correctly employed this principle in quickly converting their raid to the West bank into a major counter-offensive.

The need for a quick build-up on the far bank of the Canal so as to withstand the inevitable counter-attack was also forcefully brought out. The build-up of both the Egyptians and the Israelis across the Canal was spectacular. This enabled them to beat back the counter-attacks against their bridgeheads. Quick build-up of such large forces across a canal requires a massive engineer effort and a very strict control of movement.

A favourable air situation is an essential requirement for conducting major canal crossing operations. It is a matter of detail as to how this is to be achieved—by the normal conventional means or by the use of surface-to-air missiles or by ground forces tearing a gap in surface-to-air missile grid to enable exploitation of the superiority of own Air Force.

Unlike Viet Nam, where Americans extensively used helicopters against no opposition from enemy Air Force, both sides used helicopters in this war in the face of air opposition. The employment of heliborne troops, in a favourable air situation catering for the ground forces to effect a speedy link-up with them, will yield rich dividends. However, the launching of heliborne operations in an area dominated by the enemy Air-Force can be disastrous. Apart from heliborne operations, helicopters can also be usefully employed in a favourable air situation as weapon launching platform firing air-to-surface missiles.

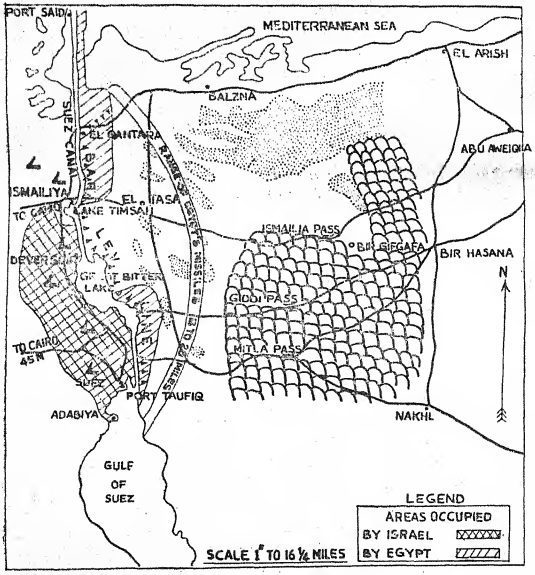
CONCLUSION

The Fourth Arab-Israeli War has introduced a new dimension to warfare by demonstrating the effectiveness of missiles. It has ushered the missile era of warfare. The Arab Infantryman guiding his Snapper anti-tank missile against a 50-ton tank or his SAM-7 against modern fighter bombers has been refighting the battle of Crecy of 1346 in which the English long bows proved so devastating against mounted French knights. This has led some to predict that the tanks and the fighter bombers, which had dominated the land battle since the beginning of the Second World War, have now lost their value. A more balanced appraisal may be that they have, perhaps to an extent, lost their mastery of the battlefield but have by no means lost their utility in battle. It has also been suggested that as Spain was the proving ground for blitzkrieg tactics before

the Second World War, the Sinai has been the proving ground for future missile warfare.

As more information is available regarding the details of these operations, a more meaningful evaluation can be carried out of tactical doctrines and weapon systems in the light of the lessons learnt in this war. From whatever little information is at present available in newspapers and journals, it is apparent that some useful lessons have been brought out which students of military sciences will do well to ponder over. We should keep abreast of these developments so as to update our professional thinking and give our training doctrines and operational planning a fresh look in the light of these recent experiences.

SINAI WAR-1973



MILITARY EDUCATION IN INDIA : CHANGES FROM THE BRITISH TRADITION

DALJIT SINGH, PH. D.

IT frequently is noted that India is one of the few developing countries which inherited a professional military. Patterned after the British model, the Indian army continues to recruit its soldiers from areas which traditionally supplied manpower during the colonial period. India's military training institutions still bear the impress of British schools. There has been no change in the rank organization, and the overall structure has not changed since 1947. In fact, some consider the Indian army to be the last bastion of the British *Raj*.

This paper will take a somewhat different position. In analysing military development with special emphasis on education and training of officers, the main concern will be to show those significant changes which have been incorporated into the system since Independence. It will be seen that the army has made a genuine effort to become a national force with distinctively Indian characteristics.

EDUCATION AND RECRUITMENT PATTERNS BEFORE INDEPENDENCE

Indians have had a long history of serving in the British armed forces. Even before the Mutiny of 1857, the British had come to rely upon Indian manpower to extend the political influence of the East India Company. There were even a few Indians who were commissioned as officers and employed by the Company. After the Mutiny, however, when the direct rule of the Crown was imposed, no Indian was considered for King's Commissions. Arguing that this was a discriminatory act of the government which must be abolished, Indian nationalists used this policy as a rallying point for protest. There was an inferior class of commissions, the Viceroy's Commissions, which were given to Indian soldiers after long years of service. However, Indian officers could not command any British soldier nor more than a platoon of Indian soldiers. Nevertheless, these men were the main link between native soldiers and their colonial officers.

Under increasing pressure from the All India Congress and other nationalist organizations, the decision to grant King's Commissions

to Indians were announced in 1918. The first of these commissions was granted to an Indian in 1920.[1] At about the same time, ten seats were reserved for Indians at the Royal Military College, Sandhurst.[2] This was a major breakthrough in the Indianization process. The number of Indian officers in the armed forces began to grow.

A policy of army recruitment based upon the "martial races" concept was followed very zealously. Under this procedure, preference was given to persons coming from specific geographic areas and religious communities. Among those who came to have a disproportionate share of army positions were the Punjabi Muslims, Rajputs, Jats, Sikhs, Gorkhas, and Pathans. As for the King's Commissions, priority was given to boys from upper middle class families of the landed aristocracy or from families who had a tradition of service in the British military. There was never a lack of army volunteers from the "martial communities," and most regiments had long waiting lists.[3]

Life was not easy for those selected to attend the British military academy at Sandhurst. The demanding training which consisted of lengthy fifteen-mile drills, shooting practice, and riding, took its toll. The failure rate for Indians was much greater than for British cadets. Approximately thirty percent failed to pass the eighteen-month course, a rate ten time higher than for their English counterparts.[4] Later, after sharp criticism from Indian nationalists, the failure rate was lowered.

DISCRIMINATION

At Sandhurst, communication between the Indians and British was not always easy, and there were many subtle forms of discrimination. No Indian was allowed to order an English cadet. General Ayub Khan notes in his autobigrophy :

> The British did not practise the colour bar in a blatant manner, as in some countries but they were no less colour-conscious. In those days anyone coming from a subject race was regarded as an inferior human being and this I found terribly galling.[5]

Ayub Khan further recalls that he was the first foreign cadet to be promoted to the rank of corporal. He was advised as follows :

> . . . We are going to repose great trust in you. We hope you will justify the trust. We have today broken our tradition and decided to grant you two stripes and make you a corporal. We are doing this as an

experimental measure to see whether foreign cadets can discharge the heavy burden of this responsibility.[6]

Later, Ayub discovered that this "heavy burden" entailed exemption from rifle inspection. Even so, those who were fortunate to be chosen for Sandhurst cherish the memories of their years spent at the academy. Pride in the institution is expressed by the former Indian General, B.M. Kaul :

> I had imbibed much at Sandhurst. I learnt a code of conduct, a sense of discipline and the significance of honour. I was taught a set of principles true to spiritual values by which can be judged what is right. I acquired the rudiments of military knowledge, the basic techniques of my profession and to appreciate the importance of turnout and skill at professional work and games as also to face aggreeable and unpleasant situations alike. I was taught to play the game, to know what the qualities of leadership were, the sense of many values and the honour of serving one's country selflcssly and with devotion.[7]

The curriculum at Sandhurst consisted of mathematics, geography, military history, military drawing and surveying and one modern language, either French or German. Later, Hindustani was added to the list. The final examinations also required proficiency in military and athletic exercises in order to qualify for a commission.[8]

Major emphasis was given to such military subjects as field fortification, elements of permanent fortification, military drawing and surveying, military history and geography. A cadet was required to secure a minimum of 1,950 marks out of a possible 5,400.[9]

The performance of Indian officers who had completed the course at Sandhurst was better than many had anticipated. As a result, the Commander-in-Chief announced in February 1923, that eight units of cavalry and infantry would be commanded by native officers.[10]

To accelerate the Indianization process, a committee was constituted in June, 1925. Known as the Indian Sandhurst Committee, it recommended means and ways "to improve the supply of Indian candidates for the King's Commission." The Commission included Motilal Nehru and Mohammad Ali Jinnah as representatives of the nationalist parties. Both men resigned from the committee due to basic disagreement with their British colleagues over the issue of the pace at which Indianization should take place.[11] The recommendations of the Committee were to allow Indians to train in artillery at the Royal Military Academy at Woolwich, to double the number of Indian cadets at Sandhurst to twenty, to set up a military college in India, and to establish a target of fifty percent Indianization by 1952.[12] As Professor Stephen Cohen has noted:

The progress of Indianization in the interwar period was characterized by slow, hesitant concessions on the part of the British and an increasing resentment and sense of isolation on the part of Indian officers. The eight-unit scheme had the effect of segregating Indians; they not only resented the mark of inferiority but sincerely felt that they were being cheated out of the best available education. To borrow a phrase from a similar controversy, separate but equal was not really equal.[13]

It was the decision of the Government that the Indianization of the military should be parallel to that of the degree of self-rule granted to Indians. In 1930, a Sub-Committee of the Round Table Conference was established to recommend the best ways to satisfy the demands of the nationalists.[14] As an outcome of the committee suggestions, a military academy was established in India in December, 1932.[15] At the same time, the quota for Indian cadets was raised from twenty to sixty.[16]

INDIAN MILITARY ACADEMY

With the establishment of the Indian Military Academy at Dehra Dun, Indians were no longer considered eligible for King's Commissions granted at Sandhurst. The enrolment at the Indian academy was set at eighty including twenty for the Indian States Forces.[17]

Prior to World War II, the only other significant developments were the establishment of the Kitchener College in Nowgong in 1935 and the introduction of an army class at the Government College, Lahore, in 1936. The purpose behind the establishment of Kitchener College was to provide adequate education for lower-ranking Indians in the army who wished to compete for admission to the Indian Military Academy at Dehra Dun.[18]

World War II made a great impact upon the Indian army. The officer corps, as well as the rank-and-file, increased many fold. In 1939, there were only 396 Indian officers out of 4,028. By 1945, the number of Indian officers increased to 8,340. The total size of the army increased from 143,675 to more than two million. The pressure for rapid expansion helped to break down not only the colour barriers but also the preferences given to the "martial races." Most significantly, it was decided that henceforward only Indians would be considered for commissions in the Indian army.[19]

The challenges of the war forced the recognition of the necessity for a larger training academy as wll as the need for coordinated training for the army, air force, and navy cadets. On the advice of Sir Claude Auchinleck, the Government of India appointed a Committee to study the feasibility of establishing a common training centre.[20] Headed by Sir Claude Auchinleck,

the committee determined that:

1. There should be a common academy for all three arms of the military, excluding the Medical Corps;
2. Admission should be based upon competition and merit alone;
3. Instruction at the academy should be free of charge;
4. The duration of the course should be four years; and
5. Enrolment should be limited to 650 cadets per year.[21]

While these recommendations were being considered by the government, important political developments were taking place which were to lead to the partition of the sub-continent. These political considerations forced the plan for the military academy to be laid aside in the wake of pressures to divide India into two nations.

Recruitment and Education After Independence

The partition ended the long and common history of the Indian and Pakistani armies. The military forces were divided between the two nations on a three-to-one basis. Eighty-eight infantry regiments were given to India, while Pakistan's share was thirty-three regiments. The armoured corps regiments were divided with twelve allotted to India and six to Pakistan. For artillery units, the ratio was eighteen and one-half for India to eight and one-half for Pakistan.[22]

The task of dividing the training institutions was more difficult. The majority of the army training facilities were in India, while the majority of naval training centres were in Pakistan. Since no compromise could be reached on using these centres jointly, new academies had to be opened in each country.[23]

Prior to Independence, the British Indian Army had been criticized by the leaders of the freedom movement as a "mercenary force," an institution that was "hopelessly feudal, inequalitarian and castebound."[24] However, after 1947, the new Congress leadership did not eradicate the military structure which had previously been viewed with such contempt. Out of necessity, the government was forced to support the army first in the defence of Kashmir from Pakistani attack, and secondly in the effort to bring Hyderabad State into the Indian union. These early disputes left little time or energy for introducing large-scale changes in the military structure.

SIGNIFICANT IMPACT

Those modifications which could be carried out were to have a

significant impact upon future civil-military relations. First, the office of the Commander-in-Chief of the Army was abolished and replaced by the position of Chief of Staff of the Army. The effect of this move was to place the top army officer on par with his counterparts in the Air Force and Navy. Prior to Independence, the commander of the army had always been considered "first among equals" vis-a-vis the other service officers. Under the Viceregal system, the Army Commander had held a seat on the Governor-General's Council.[25]

To further de-emphasize the importance of the army, civilian secretaries in the Government of India, who previously ranked lower than lieutenant-generals, were elevated to a status equivalent to a full general. In addition, generals were now required to approach the Defence Minister through the Defence Secretary. During the British period, ranking army officers had direct access to the executive.[26]

Soon after Independence, it was realized that the number of commissioned Indian officers was too small to carry out the day-to-day activities of the nation's defence. The shortage was due to the fact that almost all of the Muslim officers had chosen to join the Pakistani forces. Also, many British senior ranking officers had left for England. In 1947, the highest rank in the army held by an Indian was that of brigadier. The situation in the Air Force and Navy was even worse. Therefore, the Government of India requested that many British officers remain in service until Indians received the necessary experience to carry on their work. In addition, many officers who had been given short-term or temporary commissions during World War II were asked to continue.

To fill the officer shortage and to realize the recommendations of the Auchinleck Committee regarding a combined centre for the three services, the plan for a new National Defence Academy was taken up. The site chosen was on 7,000 acres of land at Khadakvasla, near Poona. In January, 1955, the Defence Academy was formally opened.[27]

With the National Defence Academy in operation, it was decided to reorganize the Indian Military Academy, which had come to be known as the "Sandhurst of India." The I.M.A. was divided into two wings, the Armed Forces Academy (A.F.A.) for joint training purposes and the Military Wing for advanced training of army cadets. Entrance to the academies was open to all Indians regardless of their class, caste, or province. However, the response to vacancies was disappointing from those areas which had a low proportion of men in the military during the British *Raj*. More than seventy-five percent of the new recruits continued to come from Northern India.[28]

FEEDER INSTITUTIONS

In the last decade, several military schools have been opened. They are based upon the English educational system to prepare sons of military and civilian personnel to compete for the National Defence Academy. These are feeder institutions to the Academy.

Entrance requirements for the National Defence Academy include a written examination for boys between the ages of fifteen and seventeen and a half, and successful completion of the matriculation examination. The examination is given twice a year and is conducted by the Union Public Service Commission. Successful candidates then are required to take an additional battery of tests administered by the Services Selection Boards. These include aptitude, intelligence, and psychological tests.[29]

The prospective cadet then is sent to Khadakvasla for training at the State's expense. For two years, cadets are given general education in English, mathematics, science, geography, and Hindi. A third of their time is spent on military subjects such as physical training, map reading and military history. In the third year, more time is given to subjects related to the military and approximately one-third time devoted to general education. After three years of common training at Khadakvasla, cadets are sent for an additional year of study at their respective centres....the Indian Naval Training Centre at Cochin or the Air Force Academies at Ambala and Jodhpur. Khadakvasla, with its programme of three years of common education for all cadets, represents a major departure from the British system of military education.

The Indian Military Academy serves as the advanced training centre for older boys who have been recruited through the National Cadet Corps (equivalent to the R.O.T.C. programme in the United States). Candidates also are drawn from the Territorial Army and from among non-commissioned officers. At Dehra Dun, the emphasis is upon such subjects as weapons training, map reading, military law and history, management, tactics, political economy, and languages.[30]

LANGUAGE SCHOOL

Before Independence, there has been no facilities for defence personnel to learn foreign languages. At the time of the Indo-Chinese border dispute in 1962, the dearth of foreign language speakers was felt most acutely. So few Indians knew Chinese, that Indian intelligence work was hindered. Although the first Defence Language School was started in February, 1949, its enrolment remained very small. Initially, French, Persian,

Chinese, Arabic, Russian, and German were taught at the introductory level. Later, Japanese, Burmese, Tibetan, Spanish, Malay and Bhasa Indonesia were added.[31] The following chart shows the number of persons who have passed the lower and upper level language examinations It is important to note that the figures include personnel from the Indian Foreign Service, the Indian Information Service, and the intelligence organizations of the States.[32]

Language	Preliminary	Advance
Arabic	38	12
Burmese	20	4
Chinese	217	55
French	582	99
German	349	43
Japanese	66	5
Persian	73	24
Russian	464	159
Spanish	52	16
Tibetan	36	5
	1,897	422

TOTAL ENROLMENT IN 1965-66 WAS 517.

A significant feature of the post-Independence Indianization campaign was the introduction of Hindi as a required language for all military officers. Although Hindi was the common language of the rank and file, great pressure had to be placed upon the officers to use Hindi with their colleagues.[33] Command orders also were changed from English to Hindi.

If it is true that "an army marches on its stomach", India's army officers had long marched with British food. As part of the Indianization process, all military mess halls and canteens were required to offer Indian as well as British menus, and Indian brass eating utensils were introduced.

Military music in India had long been composed by western musicians. Indian regiments were proud to use such tunes as "Scotland the Brave," and "A Hundred Pipers." Seeking ways to return to indigenous musical sources was not easy:

> The problems confronting our military musicians who tried to compose a march were, and still are, numerous. They had no previous material to refer to. The accent in Indian music is on

melody and the adding of complicated harmony and counterpoint is apt to confuse the general Indian listener. Martial music such as a march without some harmony and 'body' to it is apt to sound odd, to say the least. The question was where to obtain the material. Ragas were tried and it was soon realized that all of them do not lend themselves to martial music, most of them indeed being too serious in nature.[34]

The necessity for the rapid industrialization of India during the 'fifties required a cut-back in the country's defence expenditures. Indian leaders felt that the military was strong enough to withstand any possible attack from Pakistan. Otherwise, its safety was assumed in border areas linked with China, Nepal and Burma. Under the policy of nonalignment, it was felt that expenditure on the services was a necessary evil. Consequently, requests by the military for modernization were either declined or delayed. Later, Krishna Menon's effort to politicize the army by promoting inferior junior officers over others, further demoralized the military hierarchy.

The reverses suffered during the border dispute with China clearly indicated weaknesses in the military structure. Hindered by outdated equipment, lack of training in mountain warfare, and insufficient manpower, the military, for the first time, found itself held in low esteem by the public. Public outcry forced the government to undertake the expansion and modernization of the srvices.

PRESTIGE RECOVERED

During the short war with Pakistan in 1971, the Indian military recovered its prestige. For the first time, the Air Force and Army coordinated their attack in such a way that they were able to overcome a well-equipped Pakistani force. The 1971 conflict further eroded the myth of "martial races," and "war heroes" were from all regions and communities of India.

The performance of the military in 1971 illustrates the "professional" character of this Indian institution. The "expertise, responsibility, and corporateness" which Samuel Huntington has described are qualities of the Indian services.[35] The education of military men stresses the importance of separating the civilian and military spheres of government. During the period of political instability following the fourth general elections, there was no move by the army to step in despite provocation from opposition party leaders. From time to time, some retired military generals have argued the desirability of military intervention, but they have been repudiated from within and without the

military. Further, the reluctance of service men to enter the civilian sphere is measured by the fact that very few generals enter politics following their retirement. Most return to their home villages to pursue a life of leisure, to become "gentlemen farmers".

The strength of the Indian military lies in the fact that it has come to possess a sense of national purpose which overshadows party disputes of a communal or regional nature. These are the very disputes which constantly embroil the political apparatus. The main concern of the military is for the stability and continuity of democratic institutions. While servicemen have periodically been called upon to quell civil disorders, tasks of this nature are not found congenial by military men and are felt to be contrary to their calling.

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NON-PROLIFERATION—A HOAX

MAJOR K BRAHMA SINGH

THE nature and magnitude of India's first ever explosion of a nuclear device at Pokaran make it clear that the experiment was for peaceful purposes. At the same time, the test gives practical shape to our nuclear weapon capability. It has proved that India can make nuclear weapons if and when she decides to do so. It is this aspect that has provoked bitter, and at times malicious, criticism from some countries. In our capability to develop nuclear weapons, these countries see a threat to their concept of non-proliferation. For us, however, this capability has enlivened the hitherto hypothetical debate on whether or not we should go nuclear the military way.

The impression that any proliferation of nuclear weapons beyond the countries that possess them at present is dangerous for the security of mankind is perhaps deliberately being created by the Big Five, more for perpetuating their monopoly than out of any serious concern for mankind. The prime consideration in determining whether we should or should not acquire nuclear weapons should be national security rather than biased world opinion. We would owe no apology to anyone if we use the test for developing nuclear weapons.

PRESENT POLICY

Developing of nuclear weapons implies the development of a complete weapon system. This would naturally take time and what we may start developing today would be ours for use only probably after 15 years or more. Our decision on whether to go in for nuclear weapons or not should, therefore, be based on the world situation likely to prevail 15 to 20 years hence. At present, the main threat to our security comes from a nuclear power, China, because of her general policy of political dominance in Asia. This threat will continue because China is not likely to give up her policy and India would always remain an obstruction to the fulfilment of her designs. This being so, what could be the basis for our determination not to start developing nuclear weapons. It would be naive to suggest that while outwordly maintaining an "Atom for peace" posture, India may be secretly going in for atomic weapons. It is impossible to develop such weapons and their delivery systems, secretly due to the numerous and

peculiar, (difficult to camouflage), tests that would be involved. Further we have committed ourselves to the non-development of nuclear weapons far too categorically not to mean it.

What appears to have influenced our policy is the faith that we have developed in the concept of non-proliferation of nuclear weapons, in spite of not being a signatory to the Treaty. This is apparent from the over-emphasis on not developing nuclear weapons. This attitude is dangerous from the national security point of view. Non-proliferation is a hoax which aims at preventing a nuclear war only at the cost of political subjugation of the "non-nuclear" by the "nuclear" and must never be allowed to influence our thinking and make us hesitate in developing nuclear weapons.

THE ANOMALIES

Fundamentally, the concept of non-proliferation is anomalous. The exponents of the concept have not only built up, between themselves, stockpiles of nulear weapons, enough to destroy the world, but are also relentlessly acquiring more and more, enough perhaps to destroy the world many times over. They are not opposed to an increase in nuclear weapons as such, but are only against sharing them with others. In others acquiring them, they see a threat to world peace because they believe that theirs are the only governments that are responsible enough to know the judicious use of these weapons and that others may set off a total nuclear war by their indiscriminate use. To dissuade others from joining their nuclear arms club, numerous arguments against further proliferation like, the chain reaction that this would set off, the balance of power that would get tilted, the adverse effect that it would have on the economy of new entrants etc, are being put forward. Generous offers of providing nuclear protection (without political strings of course) are being made by one member of the nuclear arms club to countries threatened by another. All this makes one suspicious of the sincerity of purpose of the exponents of the concept of non-proliferation.

The Chain Reaction

The chain reaction that is sought to be prevented through non-proliferation was, in fact, set off when the first country in the world decided to arm itself with nuclear weapons. So when the US made the 'bomb' it was but natural that the USSR should have done the same for maintaining world balance of power. With the USSR acquiring it, the West European countries felt threatened and were compelled to buy American protection at the cost of being politically dominated by her. To shake themselves out of American dominance, and to rise above the second-rate power status to which they had been reduced, Britain and France had to

acquire independent nuclear deterrents. In Asia, China felt strangulated under the Russian nuclear umbrella and she too decided to go nuclear, thus raising the membership of the club to five. At present, India, vowed to the peaceful uses of nuclear energy, cannot be considered the sixth member, but with a nuclear power (China) threateningly poised against her, it would not be any surprise if she goes nuclear too. If she does, then perhaps Pakistan and Iran might also want to go nuclear, but who could blame India for this chain reaction ? India would go nuclear, if she ever does, as a victim of the chain reaction rather than as its initiator.

The Balance of Power

The only way to ensure that a conventional war does not turn into a nuclear one would be through a balance of nuclear power between potential enemies. The threat of mutual destruction, created by the retaliatory capability of each of the opponents at war, precludes the use of nuclear weapons by either. On the other hand, a nuclear imbalance and absence of a retaliatory capability in one of the parties at war would tempt the other to use nuclear weapons and make short work of the war. How impatient and arrogant a country possessing nuclear weapons can become, when the other side at war does not, was demonstrated during World War II when, throwing morality to the winds, the Allies used the Atomic Bomb and caused the massacre of thousands of innocent people, (including women and children), just for hastening the Japanese surrender by a month or so. Many arguments were given by the Allies to justify the use of the Bomb against Japan and to prove that it was inescapable, but the fact remains that had Japan possessed even the slightest capability to retaliate, the Bomb would never have been used against her, no matter what great advantages the Allies could have derived by doing so. It is, therefore, ironical that non-proliferation should be advocated in the name of world peace.

Unfortunately, balancing of power is a tricky game and it may so happen that by restoring the balance through proliferation at one place, one may upset it, at another. The exponents of non-proliferation have the tendency to highlight the imbalance created by proliferation and use it as an argument against it, while totally ignoring the balance that it would establish. As a matter of fact, proliferation takes place more for restoring balance of power than disturbing it. This is evident from the proliferation that has taken place so far; but it is a vicious circle all the same. Whether a country is justified in going nuclear for establishing the balance with a country, even at the cost of disturbing it with another, could at best be judged from the type of balance that is being claimed to be restored

and with whom. If two countries are militarily equal otherwise, or are potentially equal, establishment of a balance of nuclear power between them would naturally be justified. We are potentially equal to China and would, therefore, be fully justified in establishing a balance of nuclear power with her.

THE NUCLEAR UMBRELLA

As a substitute to the proliferation that may be necessitated for maintaining the balance of power, nuclear umbrellas are being generally offered to the non-nuclear countries by the nuclear countries. Under these umbrellas, the security of a non-nuclear country is being sought to be ensured through a world balance of power rather than a regional balance of power to obviate the necessity for further proliferation of nuclear weapons. This might appear to be an answer to the problem of proliferation, but in fact, the idea is as ridiculous and unrealistic as non-proliferation itself. In the first instance. it poses a big problem to the non-nuclear country in deciding whose nuclear umbrella to get under. There are at least three, if not five, powers offering this umbrella all of whom are at daggers-drawn with each other. By accepting the nuclear umbrella of one, would not a non-nuclear country be unnecessarily getting involved in a cold war (if not hot) with the other. A country seeking nuclear protection would also be required to specify its enemy and thereafter fall in line with the enemy's enemy. Having joined a power block thus, the non-nuclear country being the weaker partner would lose its identity, diplomatic manoeuvrability and political freedom, making any other security so achieved meaningless and not worthwhile. A country like India which, with its size, population and particular position on the globe, is destined to play an important and independent role in world politics, cannot be expected to accept such a position.

Even if a country were to accept the nuclear umbrella, there would be no guarantee of it receivng the necessary protection at the time of need. For, it would be most unrealistic to expect any country to involve itself in a self-destructive duel for the sake of another. So while the protector country would have established its right to political and economic preferences in its protected country during peace, it is likely to back out at the crucial time for fear of self-destruction. The only help that a victim country may then expect would be sympathy, mercy missions, financial help for reconstruction, and a general denunciation of the aggressor, a poor consolation indeed ! In any case, such help would be forthcoming even without having to accept the nuclear umbrella from anyone. Even the aggressor would probably render such help, just as the Allies helped Japan.

INDISCRIMINATE USE

The fears that proliferation of nuclear weapons might result in their indiscriminate use by some country, thereby setting off a nuclear world war, are based on assumption that the "big five" who own nuclear weapons at present are the only responsible governments, who could be trusted with the safe custody of these weapons. This may be what the "big five" feel about themselves, but they cannot expect others to believe the same. Others know too well that all the tension that exists in the world today has been created by the rivalaries among the Super Powers and that if the nuclear weapons are unsafe anywhere it is in the hands of these powers.

Every government would be sane enough to understand the implications of the use of nuclear weapons when the other has the capabilities of the second strike. So the world has little to worry about proliferation as long as it aims at establishing a proper balance of power between potential enemies. Least of all, need the world feel concerned at nuclear weapons proliferating to India. They would be safest here, as India is by far the most "trigger unhappy" country in the world. So "tigger unhappy", in fact, that on numerous occasions she has been guilty of neglecting national interests for the sake of the world peace. She is perhaps the only country that attempted unilateral disarmament, as one of the first actions after independence, hoping to settle all disputes with her neighbours through "Panch Sheel". She has been most reluctant to develop militarily ever since, and has had to be successively pushed by circumstances into becomng a military power of present standing. That the wars she has had to fight were not of her choosing is borne out by the fact that she has not tried to gain any political or territorial advantage even out of the three wars that she has won against Pakistan. As a matter of fact, India is still trying to appease Pakistan in an attempt to bring her round to see reason. Even in Bangladesh, which was liberated at the cost of thousands of Indian lives, India made no attempt at gaining any more advantage than sending the refugees back to their homes. Nuclear weapons would, therefore, be safer in the hands of India than any of the countries holding them at present.

THE NUCLEAR THREAT TO INDIA

Apart from the long-outstanding border dispute between India and China, India is also China's natural rival in Asia. The Chinese nuclear power, therefore, poses a very real and live threat to our security. The nature of the threat so posed may be considered under the following heads :-

(a) The threat of nuclear blackmail during the cold war;

(b) The threat from her strategic weapons during war; and

(c) The threat from her tactical weapons during war.

Nuclear Blackmail

Just as in the past, political power grew out of the barrel of the gun, today it grows out of the Atom Bomb. The political power so gained can be very effectively used for political blackmail of countries that do not possess the Bomb. The mere possession of nuclear power by China, when we do not have it, enables China to speak from a position of strength in her disputes with us. She would have no fear of the possibility of a way breaking out if negotiations fail which India certainly would. She would naturally use this strength for blackmail and for extracting undue advantages during the negotiation period. The only way for India to fight against this blackmail is by aquiring nuclear power. As this type of threat is more psychological than anything else, it would not require India totally to match the nuclear power of China. A mere display of a nuclear weapons capability which would go a long way in putting India in a position of equality which China would be sufficient to meet this threat to the "will" of the nation to fight.

Threat from Strategic Weapons

The destruction that could be wrought by a single strategic nuclear warhead over a civil population area would be so dreadful that no country would risk one landing on its people even if it possessed the capability of landing many more on its opponents. Chinese threat from such weapons can, therefore, at best be met by just developing a retaliatory capability. Here again, we would not be required to match weapon for weapon. A mere second-strike capability after being able to stand up to the disarming first strike by China would constitute a deterrent credible enough to dissuade China from using these weapons against us.

Threat from Tactical Weapons

While there may be reasons to believe that the Chinese would not use strategic nuclear weapons against us, even if we do not possess a retaliatory capability, there can be no reason to believe that they would not, in a future war, use tactical nuclear weapons to win an easy victory. The terrain over which we would have to fight is ideally suited for use of tactical nuclear weapons. The area is undeveloped and sparsely populated which affords opportunities for dealing with military targets in isolation and without giving cause for protest from the rest of the world.

As tactical weapons have a limited destructive capability and would in any case be used only between the armed forces who could be trained to protect themselves against a nuclear attack, use of tactical nuclear weapons does not have the same implications as the use of strategic nuclear weapons and a more retaliatory capability would not ensure security against their use. The only credible deterrent would be a proper balance of power between opponents. not only by matching weapon with weapon, but also by matching defensive and offensive nuclear tactics. Only then victory would be assured to none and use of such weapons would appear fruitless. Our determination not to develop nuclear weapons would appear suicidal when viewed in the light of this threat from China.

ECONOMIC ASPECT

No study in Defence would be complete without considering its financial aspect. The general aim of this study should, however, be to find out how best our resources could be channelised to meet the Defence needs rather than to cut the Defence needs to suit our conveniences. There is certainly a limit to what a country may spend on Defence, but to ensure effectiveness, that limit is solely related to the existing threat and how it is intended to meet that threat. This line of thinking is all the more necessary while formulating our nuclear defence policy, because a nuclear weapon programme would cost much more than can be met from a normal defence budget, and the magnitude of the effort, that would be required to gear the country's resources for meeting the Defence needs, would be so great that it is likely to shake our faith in our ability to stand the strain, and may make us give up too soon. Many in our country have already begun to feel that a nuclear weapons programme is beyond our reach; they think that even our recent explosion involving an expenditure of Rs. 30 lakh has been conducted at the cost of food. They have evidently been taken in by the propaganda launched by some foreign countries to malign and ridicule our achievement in an attempt to dissuade us from going nuclear. The criticism of our expenditure on nuclear explosion is obviously not being made out of any genuine concern for our people. Otherwise, how come no accusing finger has been pointed at us by these countries when at times we have been guilty of fiscal mismanagement and wasteful expenditure, the amounts involved wherein would have bought much more food than with the Rs. 30 lakhs (or even Rs. 80 lakhs as some Western observers would want to believe), we have spent on the nuclear explosion.

Of course, while the resources must be geared to meet the Defence requirements, the Defence burden must also be reduced to the minimum.

Apart from the application of general principles of economy to all Defence expenditure, it may be cut on consideration of alternatives (other than suicide and surrender) and substitutes. Even some risks may be taken but only as long as they are calculated and not just based on a "hope for the best" policy.

The debate on "butter" verses "guns" is age-old, which goes on in every country and must not disturb us unduly. Even the US and the USSR have been charged with blowing up billions in developing nuclear weapons while many in their own countries live below or on the poverty line. The fact is that there is no limit to the amount of "butter" that is required in a country and any expenditure on the "guns" has to be at the cost of the "butter". It, however, needs to be understood that "guns" are necessary to eat the "butter", whatever little a people may have, with safety and honour.

THE INDIAN ARMY ON A NUCLEAR BATTLEFIELD

RAVI RIKHYE

ON July 1, 1916, the first day of the Somme Battle, the 8th British Division attacked its assigned sector with 8800 men. Within two hours, it had lost 218 of its 300 officers, and 5274 of its 8500 men. Overall 60,000 British troops were killed, wounded, or missing that day.

An enemy using tactical nuclear weapons could cause the same destruction within minutes on our Northern or Western fronts. 30 weapons of 20-kiloton yield could cause 33% casualties among the combat brigades of each of a division. 30 weapons of 1-megaton yield could cause 66% casualties among the divisions as a whole. Such losses could completely destroy the fighting capability of our fronts.

China must be presumed already to have something between two and three hundred tactical nuclear warheads. By 1990 AD, India, Pakistan and Iran can all have at least that many. 1000 megawatts of reactors (light-water type) can yearly produce 150 kilograms of plutonium when being run for electricity production alone. By cutting down electricity generated, the plutonium yield can be increased. 150 kilograms is sufficient to produce between fifteen and thirty tactical warheads, depending on the desired yield.

By 1986 or so, India should have around 1300 megawatts in reactors under its own control (Kalpakkam=400 MW; Norona=400/500 MW; No. 5 Station=500+MW). By 2000 AD, this figure could increase to 3500 MW. Anything upto one hundred bombs a year can be produced by that year.

Iran has ordered—only as a first batch—seven nuclear-power stations, two from the United States and five from France. A uranium enrichment plant is also to be built. There is no mention of safeguards for the French stations. Since Iran wants to conserve its oil for the petrochemical industry, it is possible by 2000 AD Iran will operate something like 30,000 MW worth of reactors.

By 1980, Pakistan will have operational around 700 MW. By 1990, this figure will increase to 3500 MW in five power stations, by 2000 AD

something like 9/10,000 MW will be produced in fifteen power stations. While its 120-MW research reactor is under Canadian safeguard, it is nuclear how many of the power stations to be installed will be so restrained. As, however, the French appear to be willing to sell anything to anyone, reasoning it is the buyer's business what he wants to do with French equipment, there is no reason to suppose Pakistan cannot obtain reactors without safeguards.

LIMITATION OF SAFEGUARDS

A word about safeguards themselves. The data that allows an agency like International Atomic Energy Agency to determine if material is being diverted for weapons is furnished almost entirely by the country owning the reactor. There are limits to how much a country can cheat, but it would appear 10% of the plutonium produced can be diverted without arousing undue suspicion. With a 1000-Mw reactor, a country could divert material sufficient for thirty bombs a year. So safeguards are not as safe as some nations, anxious to earn money from selling reactors, would lead one to believe.

Till today, the Indian Army has refused to consider the implications of operating on a nuclear battlefield. Some simplistic noises have been made asserting that since nuclear weapons are unusable, there is no need to think about it even if the enemy has them. Agreed that no nation can use megaton-sized bombs without risking escalation; granted there are severe inhibitory factors restraining a nuclear nation from striking a non-nuclear nation. Even today, however, it is possible to conceive of situations where 20-kiloton bombs could be used in the Himalayas or the Rajasthan desert without attracting escalation or much world-wide notice. It is surely incorrect to argue that the escalatory risk for small weapons are the same as for large weapons, particularly when the Great Powers already have 10-KT, 5-KT, and 2-KT weapons, with the US said to be busy on weapons all the way down to 10 tons, and said to have perfected radiation-free bombs. Dropping a 1-KT bomb will cause less damage than a single B-52 squadron strike with conventional "iron" bombs. The restrictions against use of tactical nuclear weapons may turn out to be largely psychological and moral, which in turn means we are in trouble if the other side does not subscribe to our system of ethics. Like it or not, the Indian Army must start thinking about the problem of operating on a nuclear battlefield.

This article deals with some of the problems likely to arise on such a battlefield. The discussion is by no means comprehensive: it treats only some of the more obvious problems that are likely to arise.

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NUCLEAR STRIKE
PLANNED
ACTUAL
TANK
MECH INF
ARMD RECON
RESERVE
RECON
AIR CAVALRY
GS ARTILLERY
ATTACK HELICOPTER
ENGINEERS
AT ANTI-TANK
MISSILES
AA MISSILES

First, some rough figures on the power of nuclear weapons. Since the damage caused by a nuclear blast depends on several variables such as height of detonation, terrain, weather, and so on, these figures must be regarded as strictly illustrative, more so because they represent crude extrapolations made from a very few facts available to the author.

A 20-KT air-burst should cause 100% casualties to unprotected personnel in a four-square-mile area. A 1-megaton air-burst will cause 66% casualties over a 1000-square-mile area to unprotected personnel. These figures are taken from the United States civil defence manuals.

A 100-KT explosion will cause an overpressure of 32 pounds per square inch at a distance of 2800 feet from its centre. The Blast Scaling Law holds that doubling the yield increases overpressure by 60% at a given point, so that a 200-KT explosion will generate 53-psi at 2800' and a 50-KT burst will generate 19-psi. Halving the distance increases overpressure by roughly four times. So a 100-KT explosion at 1400' will generate and overpressure of 128-psi, a 100-KT explosion at 5600' will generate an overpressure of 8-psi. A brick house will collapse under 5-7 psi. In battlefield terms, these figures mean a 2-KT should finish off a battalion preparing for an attack. A 10-KT will easily destroy a mechanized infantry battalion, but something larger will be needed to wipe-out a tank regiment. A 50-KT should destroy most of a brigade massing for attack. But because of the dispersed nature of operations in South Asia (as compared to Europe), to wipe out a division will take something like a 1-MT.

The mind must naturally boggle at such probable losses. The critical thing to remember about nuclear weapons, however, is that with proper tactics, organization and training, they can be faced and overcome. Dispersion and protection are utilized to minimize nuclear-blast effects; this in turn means armoured mobility, with vehicles capable of operating in a contaminated atmosphere and able to cope with the heat generated by a nuclear explosion. Let us assume that 40-psi overpressure will incapacitate a tank. This is perhaps 10 times the psi needed to disable a man standing upright at time of explosion. Then a tank should be able to cope with even a 100-KT blast 0.50-mile away (32-psi). At 0.25 mile, the tank is a goner: the overpressure will be 128-psi. A 50-KT blast at 0.50-mile will hardly be felt: only 19-psi overpressure. At 0.25-mile, however, the overpressure is 76-psi, which means the tank is lost. A 20-KT burst at 0.25-0.125-mile is survivable, because it will generate around 38-psi orverpressure, At mile, of course, the tank is lost because overpressure will be around 152-psi. A 10-KT burst at 0.25—mile is no problem: only 24-psi overpressure.

But at 0.125-mile, it is lethal, as overpressure is 96-psi. Even a 5-KT generates around 56-psi at 0.125-mile. A 2-KT is harmless at 0.125-mile: only about 24-psi. So say a 4-troop tank squadron is moving 3-up and 1-back on a one-mile front, maintaining an equal dispersal between troops, then any blast of 20-KT or less will fail to cause more than 25% losses.

REAL DANGER

The important thing to understand, however, is that no commander in his right mind is going to waste a 20-KT on a tank squadron. A division commander in the 1990s, be he Indian, Pakistani, Iranian. or Chinese, will have something like 10-20 warheads under his own control, with corps disposing of perhaps 20-40. He will be in deep trouble should he waste his warheads on squadrons or companies. In a 7-day war, he will be able to spare one to three warheads for each day; and we can be sure that he is going to think very very hard before he goes even for a battalion target. Remember also that there will be a certain number of fixed-targets like bridges and communication-centres which also have to be hit, so his warheads for use against units are fewer still. The real danger will come in the post-2000 AD period when a division commander has perhaps a hundred or more weapons of 20-KT down to 0.1-KT. Then it definitely becomes worthwhile to go after squadrons and companies with 20-KT or below, but if dispersal is maintained, the smaller weapons can easily be faced. A 10-KT or smaller, for instance, may not even cause any losses to the tank squadron taken earlier as an example. Two warheads of 10-KT size might be needed for 25% casualties.

With proper planning and equipment, low- and sub-kiloton blasts can be survived with losses for less than those common for modern-day conventional war. The 1973 Arab-Israeli War was fought with the weapons of the 1970s, unlike the Indo-Pakistan War of 1971 which used mostly weapons now considered obsolete. In the 16-day Mideast War, the 33 division-equivalents engaged suffered 110,000 casualties, compared to the 30,000 suffered by the 40-odd division-equivalants engaged in the 17-day 1971 war. In both wars, several divisions were lightly or not at all engaged. Though to a great extent the four-times higher casualties for the Mideast War resulted from the thicker density of deployment, the losses indicate the tremendous lethality of present-day ordnance, particularly air-delivered weapons. The Egyptian Army alone suffered 60,000 casualties, mostly at the hands of the Israeli Air Force. On October 7, 1973, in a single engagement, the Syrian Army lost 800 tanks to Israeli forces.

Weapons of far greater lethality are already in the works. One

example is the US laser-guided artillery round, which will increase by a factor of 100 the effectiveness of artillery, particularly when point-targets like tanks or bunkers have to be hit. Another example is the West German minelet system, delivered by air or artillery. This shows promise of destroying upto 100% of an attacking force, and the mines appear to be unsweepable. Even against current high-lethality ordnance, tactics used in the South Asian context will prove suicidal. But with even more lethal weapons coming, unless tactics are changed, losses far higher than those common for World War I will have to be routinely accepted.

At this point, it will be objected: all very well to disperse, but whoever heard of tank squadron operating on a one-mile front? A hundred yards is more like it when moving into the attack. The enemy is going to massacre you with his conventional weapons if you come in with a half-mile gap between your tank troops. The answer to this is that, of course, the enemy will not be concentrated either. If he is, he makes a good target for a nuclear-strike. He too must stay dispersed at all times. In the early days of nuclear warfare, anywhere upto 4 hours were needed to prepare a nuclear strike, so there was ample time to disperse if such a strike were suspected. But now it takes from two to fifteen minutes to put down nuclear fires, so dispersal must be permanent.

NEW METHODS OF FIGHTING

This calls for a new method of fighting. The concept here is modified from an idea presented by Lt. Col. W.L. Hauser of the US Army. In his scheme, manoeuvre is used to find the enemy, but fire is used to kill him (area weapons already account for 85%+ of casualties). There is no forward edge of the battle area, units operate in envelopes of varying size depending on their strength, sensor capability and firepower. Col. Hauser's brigade is self-sufficient in firepower. It has a manoeuvre regiment with, say, two mechanized battalions, a helicopter assault battalion, and an air cavalry regiment; a Command, Control, and Surveillance Battalion; and a Fire Regiment with an airmobile field regiment. and SP heavy regiment, an Aerial Field Artillery regiment, and a survey battalion. The division holds the logistics, coordinates the airspace between brigades, and controls the general-support artillery. Brigades seeks to dominate space rather than hold ground, because in holding they become vulnerable to chemical, biological, nuclear, or conventional high-lethality strikes. Because the manoeuvre units act to find the enemy but not to fight him, except on highly favourable terms, casualties are minimized as far as possible.

Col. Hauser's division would be too expensive for India: it would have no fewer than twenty-four manoeuvre and fire battalions, all heavily mechanized or airmobile. Our division would have to be smaller, not much larger than this brigade. It would have four major elements: (a) Command, Control, Reconnaissance, and Electronic Warfare; (b) Manoeuvre; (c) Fire; and (d) Logistics. Each element would be made us as follows.

(a) *CCRE*

i Command, Control, and Surveillance Battalion
- — Command Company
- — 3 X Signal Companies
- — Surveillance Company

ii Air Cavalry Regiment
- — HQ and HQ Sduadron
- — 3 X Air Cavalry Squadron
- — 1 X Armoured Reconnaissance Squadron

iii Electronic Warfare Regiment
- — HQ and HQ Squadron
- — Sensor Squadron
- — Electronic Measures, ECM, and ECCM Squadron

(b) *Manoeuvre*

i 1 X Attack Helicopter Regiment
- — HQ and HQ Squadron
- — 3 X Attack Helicopter Squadrons
- — 1 X Airmobile Infantry Squadron

ii 3 X Tank Regiments
- — HQ and HQ Squadron
- — 3 X Tank Squadrons
- — 1 X Mechanized Infantry Squadrons

iii 3 X Mechanized Infantry Battalions
- — HQ and HQ Company
- — 3 X Mechanized Infantry Companies
- — 1 X Tank Company

Mountain divisions would be organized differently, with two attack helicopter regiments and five airmobile infantry battalions.

(c) *Fire*

i HQ and Support Regiment
- — HQ and HQ Battery
- — Survey Battery
- — Surveillance Battery
- — Support Battery

ii Anti-Aircraft Regiment (Missiles)
- — HQ and HQ Battery
- — Support Battery
- — 3 X Missiles Batteries

iii Field Artillery Regiment (Missiles)
- — HQ and HQ Battery
- — Support Battery
- — 2 X Missiles Batteries

iv 2 X Medium SP Regiments each with
- — HQ and Support Battery
- — 3 X 155mm SP Batteries (or 130mm)
- — 1 X 175mm SP Battery

v 1 X Aerial Field Artillery Regiment
- — HQ and HQ Battery
- — Support Battery
- — 4 X AFA Batteries (12 AFA helicopters each)

vi 1 X Airmobile Medium Regiment
- — HQ and Support Battery
- — 1 X Lift Helicopter Battery
- — 4 X 155mm AM Batteries

Mountain divisions would be organized differently, with the AA Missiles Regiment having two light and one medium battery instead of three medium, one field artillery missiles regiment, two AFA regiments, and two Airmobile Medium Regiments with the 155mm howitzer.

(d) *Logistic*

i Headquarters Battalion
- — HQ and HQ Company
- — Administrative Company
- — MP Company

ii Engineer Regiment
- — HQ and HQ Squadron
- — 2 X Forward Support Squadrons
- — 1 X Bridge Squadron

iii Maintenance, Supply and Transport Battalion
- — HQ and HQ Company
- — 2 X Forward Maintenance Support Companies
- — 2 X Transport Companies
- — 1 X Supply Company

iv Medical Battalion
- — HQ and HQ Company
- — Clearing Company
- — Air Ambulance Company

v Aviation Support Regiment
- — HQ and HQ Squadron
- — 2 X Utility Helicopter Squadrons
- — 1 X Aircraft Maintenance Squadron
- — 1 X Base Support Squadron

vi Medium Helicopter Battalion
- — HQ and HQ Company
- — 3 X Medium Helicopter Companies
- — 1 A Attack Helicopter Company

For our purposes, a brief description of these units will suffice. In the *Logistic* element, all units will be compact and provide only basic logistics. Nuclear wars are likely to be much shorter than conventional ones, and there is no point in providing for very long war situations. If these do occur, reserve units can be employed. Area Support Commands will hold more comprehensive logistic forces, and a number of divisions will be able to plug into an Area Support Command. Logistic units will be modular in organization, so they can be shifted as required by differing missions. Because all combat units will be operating dispersed, they will have a greater number ol logistic troops than is usual. For instance, each units will have its own engineer troop and bridge troop, lessening the demands on the divisional engineer regiment. The Medical Battalion acts mainly as a clearing house to channel casualties back to base hospitals. Fixed hospitals in the field will become nuclear targets. Because each combat unit either has its own helicopters or others available from division, the

medical battalion only has some 25 helicopters for its own work and casualty evacuation. Similarly, the Aviation Support Regiment only has 50 utility helicopters for the use of units which need them but do not have organic helicopter attachments. The Medium Helicopter Battalion has 48 medium helicopters and an escort company.

MOBILE FIRE SUPPORT

The *Fire* element is large. Only one Anti Aircraft Missiles Regiment is provided (for divisional coverage) because each unit has organic AA batteries. Units in addition will hava assigned to them four to twelve man-portable SAM teams.

The Airmobile Field Regiment will provide highly mobile fire-support over great distances. Its organic Lift Helicopter Battery will move a complete firing battery and essential support at speeds upto 150 miles per hour. The Aerial Field Artillery Regiment, helicopters equipped with packs of rockets, will provide very-fast, quick-reaction fire-support. The speed will outweigh the lightness of support, because there are several situations in which rapid reaction is more important than weight of fire. The medium regiments will provide the heavyweight support, with the 175mm batteries giving an important range addition to the 155mm guns.

Presently, the US is trying out a soft-recoil howitzer that will be mounted on a helicopter. If such a system comes into use, it could presumably replace the Airmobile Field and Aerial Field regiments because it would combine the characteristics of both: speed and weight.

The *Manoeuvre* force is self-explanatory. Though the tank's protection will probably once again make it the king of battle, there will be situations where mounted and dismounted infantry will be more valuable. There is thus a balanced provision for mechanized infantry and tanks. In the attack helicopter regiment, the airmobile infantry squadron will provide additional reconnaissance capability, plus allow the holding of objectives, etc.

The *CCRE* element is the head of the division. The Command Company will have every uptodate method of displaying and evaluating information to allow easier decision-making on a far-flung battlefield. Powerful signal elements are included for communications. The Surveillance company will provide 24-hour watch over the battlefield, as well as tie-in information from all elements. The Air Cavalry Regiment will undertake traditional cavalry roles. The Sensor Squadron will provide

the active and passive sensors to patrol and watch gaps, whereas the EM, ECM and ECCM Squadron will fight the electronic battle, protecting the division's communications and sensor links while trying to interfere with the enemy's communications and sensors.

The Appendix contains a rough scheme showing how the division will operate on the battlefield.

Now let us discuss some of the more obvious points that come up in persuing such an organization. First, this spells the end of the infantry's dominance of the battlefield. Artillery becomes the Queen of Battle. In a thirty-division force structure, something like 120 battalions only will go to the infantry. The armoured corps will have some 150 regiments (including corps reconnaissance and tank units). But the artillery will have well over 250 regiments, depending on how many regiments are in corps and army artillery. This is not as outrageous a proposition as it may seem at first. In World War II, at times upto 33% of all Red Army men were gunners. A US field army of three corps and 12 divisions, despite the enormous reduction in artillery units brought about the introduction of missiles, to this day disposes of 200 artillery battalions, a figure larger than the number of infantry and tank battalions allotted to the field army.

SINGLE COMBAT ARM

This might provide a good opportunity to combine the manoeuvre arms in a single combat arm. Of course, it will take time to get used to the 6 Punjab operating tanks or the 1/4 Gurkhas flying attack helicopters, but then already today a Guards battalion operates missiles and has no infantry, and an armoured corps regiment also with missiles has not a single tank. And just think what a fit old man Skinner would have if instead of the 160 beautifully matched horses that made up Skinner's Horse he was to see, neatly lined up, 48 oily, metallic, noisy, and fuming tanks!

The nuclear battlefield will require hardening of all support troops. They too will have to have APCs instead of trucks and jeeps, though possibly the APCs can have lower performance characteristics than their combat counterparts. At any rate, armouring the tail will put an end to the ever-present risk that a canny opponent will slip by the mailed head without engaging, and destroy a division by instead attacking the soft tail.

The hardening requirment and the dispersed nature of combat will profoundly alter traditional support concepts. When a Rs. 1½-lakh truck has to be replaced with a Rs. 6-lakh APC, then a lot of thinking has to be

done whether there is some way to get rid of that truck. A division operating with no FEBA and over a 1,000 to 10,000 square mile area cannot be supplied in the normal way. Of course, helicopters will take up a great deal of the burden, but even then supply operations will have to be widely dispersed to avoid presenting a tempting nuclear target. Complete mechanization in its own way goes a long way towards solving some of the supply problems. For instance, the mechanized infantry will need no ammunition or food for a week; their APC can be designed to carry all they need inside. Already some tanks and APCs can operate for 400-mile ranges with external fuel. Ways will have to be found to increase ranges to 1000 miles, by adding more fuel capacity and increasing efficiency of engines.

AMMUNITION SUPPLY

The biggest problem will be supplying ammunition to the artillery regiments. Since there is so much reliance on fire, enormous amounts of ammunition are going to be gulped down, A single 175mm battery may fire 100-tons in a single day. Five heavy-life helicopter sorties will supply the battery, but nonetheless this is not a problem that will be easily solved.

A word about the APC of the nuclear battlefield. It will really be a mini-tank all on its own. Its rifle section may only be six men, but it will have a low-velocity gun in the 90mm/105mm range. It will have a heavy and two medium machine guns, and it will have packs of ATGMs. Because of the weight of its armament, requirement for armour protection, long range, controlled environment, it is going to be big and heavy (not much smaller than a *Leopard* tank), and it is going to be expensive. Rs. 15 lakhs will be a good guess. But it certainly will be able to look after itself on the battlefield, and be capable of employment as a tank in most situations except those requiring sustained anti-tank battles. Someday someone may well come up with a way to put a high-velocity gun on the thing, and then we will have a regular battle-tank which also carries a six-man rifle section inside. That would open up a lot of interesting possibilities.....

Three obvious objections can be made against the concept presented. The infantry man will say: all things said and done, battles are not won by fire. The infantry must close in with the bayonet and root the enemy out. The economy-minded soldier will say: where are you going to find the money for such a division? And it is so complex that literally thousands of things could go wrong with equipment in combat. The Mao-admiring

officer will say: why do we always borrow foreign concepts? Why can we not develop our own, why rely on the *man*, rather than the machine?

The idea that battles are not won by fire is strongly rooted in the infantry-dominated Indian Army. Alas, it has no basis in fact. A hundred years ago, in the Franco-Prussian War the infantry did inflict 92% of the casualties. But by 1916-18, infantry inflicted only 6% of the casualties, almost all the rest being caused by fire elements of various kinds. On a nuclear battlefield, old-fashioned infantry cannot survive. There is no question of going in to root out the enemy. If the enemy makes the mistake of holding a position, a 10-KT burst will take care of that. In war, the object is to destroy the enemy's capability to fight. It does not really matter whether infantry or artillery fires the round that downs a man: the important thing is that he is downed. Fire, and particularly nuclear fire, is simply much more effective at killing than infantry. This has been true for over fifty years. Nonetheless, till the advent of the nuclear battlefield, infantry was still needed to hold ground. Now, however, as has been repeatedly said, holding ground will result in disaster.

The infantry is still very much needed. No machine has yet been found that can replace a pair of legs, a pair of hands, and a pair of eyes on the battlefield. But this infantry will operate armoured to obtain protection against the hazards of modern war. It will be critical to have infantry search out targets for the artillery, to operate in situations where machines cannot function, to help deny areas to the enemy. The size, organization, and mission of infantry units will change, that is all. Should anyone doubt infantry as it exists in the Indian Army today cannot function on the nuclear battlefield, he has only to answer the question: what is easier for us to raise, an infantry battalion, or for a nuclear-capable enemy to make a 10-KT bomb that in seconds will destroy that whole battalion?

Twice or three times as much money may be needed to operate the kind of division suggested here. It will cost five or more times to equip than present-day divisions. In combat, it will cost ten times to operate compared to the present-day division. For a 30-division force, an annual army budget of Rs. 3000-crores is quite likely. This estimate may even be on the low side. Admittedly, the new division is horribly complex to operate and maintain as compared to a present-day division. But think back to the days when cavalry division had to convert to armoured divisions. The cost increased by a factor of ten, and the complexity increased by at least that much. In North Africa or Russia, a cavalry division pitted against an armoured division would have lasted exactly four hours. On a nuclear

battlefield a present-day division will last exactly four minutes. Somehow the horsemen found strength to change from horse to tank, and somehow their governments found the money to pay for the change. We must do the same and go from the jeep to the helicopter, from the slide-rule to the computer. If we fail to so do, we face annihilation on the nuclear battlefield. And certain death is as good an incentive for change as any.

UNIVERSAL CONCEPTS

The answer to the third objection must be given in two parts. One, war has certain principles that remain unvarying no matter which country employs them. There is no Indian way, or Chinese way, or American way to organize a rifle section. For certain well-defined anthropoligical reasons rifle sections the world over range between eight and twelve men. Similarly an American rifle is basically like a Congolese rifle. A Chinese truck works on the same principle as a Soviet truck. A British missile is based on the same ballistic theories as a French missile. And so on. Concepts of war, like concepts of science, are universal. So just as we do not say: "Why do we always have to borrow foreign theories on gravity?", we cannot say "Why do we have to borrow foreign theories of war?" Certainly, each nation must adapt ideas to its own conditions. An Indian infantry division, for example, has fewer motor vehicles than an American one, because we are a poorer nation and our men are trained differently because they come from a different background. There can be no Indian theory of war: only an Indian adaptation of the universal theory of war.

Two, there is no question of emphasising men as compared to machines. There must be a balance of the two to meet the prevailing condition. Agreed that without men, the machines will not work. But it is also true that without the machines, the men cannot work. Agreed that our proposed division will be non-functional against conventionally-armed guerillas operating in thick jungle. The Indian problem, however, is not iungle guerillas, but heavily-armed conventional powers that have, or soon will have, nuclear weapons as well. And let us not forget that the jungle guerillas, no matter how many books of Mao's thoughts they may have, must have conventional superiority when they finally confront the enemy. It might suit the Communists to go on uttering meaningless sentences about the superiority of the spiritual sea compared to the fire sea, but Giap for his abortive third-phase offensive in 1972 was not armed with books of Mao, but with automatic weapons, 20,000 trucks, 600 tanks, armoured personnel carriers, radar-controlled guns, medium anti-aircraft missiles, anti-tank missiles, and even with jet aircraft. If men are superior to machines, let us face Pakistani armour with horsemen in the next war

round. It will be cheaper. Like it or not, man is too frail to survive for long on the nuclear battlefield. He must have machines to help him. And it is just as important the machines function well as it is important that the men function well.

A last thought. A civilian is often forced to wonder how much of the Indian Army's famed reluctance to modernize results from sheer ignorance of modern war and how much from a sheer unwillingness to accept the needed changes. It is common to assume ignorance is the root cause, but this author is not quite so sure, preferring to assume that unwillingness to change is the problem.

NEW TYPE OF OFFICERS

An army capable of operating on a nuclear battlefield will have room for the kind of officers who today form the backbone of the Indian Army. A Bachelor of Science will come to be considered the minimum degree for an officer. For promotions to top grades, one day perhaps even a doctorate will be required. Even the meanest second lieutenant will have to be a thinker, a man with great initiative and courage, able to stand in the middle of ten thousand contaminated square-miles alone with thirty men and still make the right decisions. There will be no room for the bureaucrates, the thick-skulls, the play-safers that make up so much of the army. The army will not be a pleasant, undemanding career, but a place where a man has constantly to be on his toes.

The soldiers will be as well educated as the officers. Officers will not be able to cover up for the lack of tactical expertise by ordering bayonet charges and "hold to the last man and the last round". An officer who makes a wrong decison will be immediatly disobeyed by his men. And who knows—your senior havaldar may only be waiting for you to make a mistake so that you can be removed and he can have your position. Only a general might have orderlies—and then may be only one, a civilian hired for the job. How will the major's wife survive without the orderly to take the children to school, babysit, wash the dishes, and do the shopping? Because you are certainly not going to get a B.Sc. in mechanical engineering to clean shoes for you.

Fortunately, there is no incompatability between education, intelligence, and fighting ability. At least 75% of the reason the Israelis fight so well is that they are very well aducated. University students are privates in the Israeli Army. Of course, you have to tell an Israeli section *why* such and such ridge is going to be stormed. That is not easy, particularly if the officer class (like ours) is used to not justifying itself. But the Israeli private is smart: if your reasoning is sound, he understands very fast, and he goes like hell to get that ridge.

The US Army for Vietnam had to draft B.A.s and M.A.s as riflemen. When the officer was stupider than his men, as was often the case, the men had a simple solution. Wait for the next fire-fight, and shoot him in the back. The nuclear battlefield is going to be a frightening place in more ways than one. We had better start thinking about it.

APPENDIX

THE EMPLOYMENT OF A DIVISION ON THE NUCLEAR BATTLEFIELD

In combat, the division will have no front, flanks, or rear. Over the battlefield will range task-forces of varying strength seeking to dominate areas and flushing out the enemy for friendly strikes. Each task-force will hold an envelope the size of which will depend on strength, terrain, and mission. Large areas will be covered only by sensors warning of enemy activity when it takes place. In these no-man's lands, small reconnaissance anti-tank, and engineer units operating from helicopters will range, seeking information, raiding, and where needed delaying the enemy till appropriate action can be taken. All units, even support units, will constantly be on the move, changing their base every few hours to avoid nuclear strikes. Nuclear attack could come within to fifteen minutes of detection, and despite sophisticated EM and ECM devices, a unit may not necessarily know it has been detected or targeted. Only in protected areas (say underground bunkers) will units rest.

Companies and battalions will operate widely dispersed. A battalion, depending on its mission, may cover an area of ten or a hundred square-miles. Concentration for any reason may well prove fatal. Units will avoid engagement unless they have overwhelming superiority over the unit to be engaged and unless there is a high probability a nuclear strike will not be launched. Even if no nuclear strike is in prospect, it is likely the enemy will be armed with high-lethality conventional weapons which by themselves cause heavy losses, so engagements are not to be made lightly.

Friendly strikes will come in from artillery, missiles and air. They will be of great and crushing weight and, whereever possible and necessary, will employ nuclear weapons. These strikes will be the primary method of destroying enemy units. The enemy will, of course, be as well-protected and dispersed as the friendly side. These strikes, therefore, will not be in the form of area strikes (unless nuclear weapons ars used) but high-accuracy point-strikes using laser and optically guided ordnance for artillery shells, missiles and bombs. Against a unit equipped for nuclear war, saturation conventional strikes will have little effect.

An important point. Wars with nuclear weapons are likely to be short

and there will be less time to learn on the job than there is today. Even more than today, troops will have to be kept always combat-ready.

In this visualization, the Pakistan 7 Armoured Division is reacting to an Indian penetration into Multan by our 43 Armoured Division. The enemy has appeared suddenly. One brigade-sized force is attacking the Indian left-flank in an attempt to divert attention from a two-brigade attack along the pivot between the 43 Division and its neighbouring division. The Indians have identified the scope and direction of the left-flank attack, but have yet to correctly identify the right-flant-attack. A number of widely-dispersed reconnaissance units are attempting to gain information on the right, and an airmobile 155mm battery has been moved into a protected position to start harassing-fire.

The enemy has launched two nuclear strikes against targets reported by low-altitude penetration reconnaissance-fighters. Fortunately for the Indian side, there has been delay in converting the information into strikes so the 3rd Battalion, 9 Horse, and the 3rd Battalion, Armoured Regiment have had time to take evasive action and have suffered only lightly. All the helicopter units—1 Sikhs (Attack Helicopter), 1/21 Cavalry (Air Cavalry) and the divisional Aerial Field Artillery Regiment—are manoeuvring for position to hit the advancing enemy. Two manoeuvre battalions, 5/14 Horse and 1/4 Gurkhas, are manoeuvring to block the enemy flanks and channelize him so that nuclear strikes can be launched against him and so that air-laid mine-barriers can be put down in well-defined positions.

The two divisional 155mm SP regiments and a 175mm SP regiment from Corps are moving into firing positions while waiting for more exact data to open up. The 155mm airmobile regiment (minus one battery) is preparing to locate on the enemy flank. The missiles and AA missiles are changing their dispersal pattern because of the nuclear-strikes; they are still unsure about radioactivity levels and the wind is moving debris and dust towards them. The divisional HQ and 6 Guards, the reserve tank regiment, are also altering location because of the strikes. The division left-flank is patrolled by an air cavalry troop, an armoured reconnaissance troop, and a rifle troop from the attack helicopter regiment, supported by an engineer troop and an anti-tank section.

The situation, as depicted, is likely to result in a stand-off. The left-flank attack will certainly be either destroyed or broken-up, but in the four-five hours, this is likely to take, the two right-flank brigades could have driven a corridor, which could be exploited by a reserve division, between 43 Division and its neighbour. Depending on what exactly 43 Division HQ perceives as happening, this could mean the division may have to pull back or risk fighting an independant action inside enemy territory.

THE HIGHER ECHELONS OF LEADERSHIP

BRIGADIER H S SODHI

AS a result of our wars since Independence, two remarks are often heard; first, that India has a lot of generals but little art of generalship: and secondly, that, considering the awards, it would seem that battles are being won by generals only. These remarks may well be apocryphal but certainly highlight the nimbus and charisma radiated by generals. (The generic term generals includes brigadier upwards.)

Throughout our history, the lower rank and file has not fought so much for a cause as for a leader (general.) Our history is replete with instances of the immediate effect of death or defection/dereliction of a general. It may even be said, with a large element of justification, that the majority of our lost battles are a direct result of the general's dereliction/defection. Our men, however, are ready to follow a general even in defeat if only he sticks it out.

To a large extent, the nimbus and charisma of generals today is as strong as ever and men continue to fight for their leaders rather than merely a cause which is no doubt important. Generals influence battles and contribute largely to winning/losing of wars. The influence of a general on officers and men can be of disproportionate importance.

The awe with which a general is viewed by the men can still be mystical. I was witness to a striking example of this during the Bangladesh operations. My Brigade had secured the first-phase line inside Bangladesh and the second Brigade was passing through during the night of 4/5 December 71. The General Officer Commanding came forward that night to meet the men and saw a Jat Battalion of the Second Brigade moving forward. He raised the war cry "Jat Balwan, Jai Bhagwan" and got a mighty response from the men trying to gather round him. One man was particularly conspicuous in his efforts to get closer and the General Officer Commanding asked him if there was anything special; the man replied, "Sahib, I just want to touch you".

In this paper, it is intended to discuss the qualities required in higher leadership and their inculcation/training.

QUALITIES

The qualities discussed are partly inborn but largely cultivated through study, opportunity and inclination. One major quality, Luck, is entirely beyond human control and hence not discussed, even though it may be 50 per cent of the art of generalship.

Leadership is an art subject to no immutable principles. Study of great leaders shows some marked so-called positive qualities with, however, a degree of sameness underneath. Each successful leader exploits his one or two strong characteristics. Military leadership has been described as "primarily a matter of intelligence, tenacity and iron nerves" or as "breadth of vision, with grasp of detail, patience, strategic intelligence and humanity".

Leadership in the Army, particularly its higher echelons, has two major aspects. First, it concerns the correct and judicious employment of own resources to achieve the given aim. The movement, deployment, logistics, tenacity and morale of the troops are within its ambience. And secondly, it concerns the reading of the opponent's mind to assess his most likely actions. A very sound plan, matched by unexpected unorthodoxy of the opponent, leading to own failure, is of little use; conversely, a highly un-conventional plan, which in training might be dubbed useless, would be a sound plan in battle if sucessful. In the ultimate analysis, therefore, the yardstick for judging a good general is success in battle. And such success is not only dependent upon luck but also on basic qualities, inborn and developed; this is more so in the complexities of modern warfare.

Breadth of Vision

Good professional knowledge is a basic requirement and the general level of knowledge of officers, with more than about fifteen years of service, is nearly the same, with differences of degree only, dependent upon basic intelligence and opportunity. The need in higher echelons of leadership is the development of a breadth of vision, and an analytical mind; in other words, positive thinking.

An officer spends nearly the first 20 years of his service climbing up the lower rungs of the leadership ladder. In this time, his attention is mainly on one unit, his own, and he learns this in detail. The higher rungs (brigadier upwards) consume only about 12 years, in which his breadth of vision must widen at a very fast pace. He then has to develop the ability of seeing not only the individual trees as before, but also the wood as a whole.

The higher the rank, the more the units under command/control. Strategic, economic and civil affairs considerations start coming more to the fore. All this makes for complexities that can only be handled with the added qualities like breadth of vision, tact, an analytical mind and an eye for detail. The higher leader must be able to take a broad view and yet be able to quickly analyse a problem to get at its root. This ensures that the study is neither bogged down by unnecessary detail, nor made more complicated by a fuzzy mind. While at lower levels, impulsive action can lead to success in an action, at higher levels, patience is a virtue to be cultivated.

Flexibility is an essential ingredient of breadth of vision. Problems faced are always new in some aspect. Mere application of the standard doctrine to every situation is not enough. Each situation must be dealt with, on its merits and standard doctrines modified suitably to cater for the peculiarities of the problems, own resources in the widest sense of the word, and assessment of the enemy. This is flexibility of approach, and the calculated art of unorthodoxy. We seem to have lost this to a fairly large extent.

There is then the need of flexibility to meet changing situations. A proper analysis of the problems would have brought out the various contingencies possible and need for changes in own response to each, leading to a balanced plan. In spite of this, the enemy is likely to do the unexpected or own actions at lower levels are not in conformity with expectations. In such cases, flexibility within an overall plan is necessary but only a breadth of vision can keep flexibility from becoming indecision.

NEED FOR INITIATIVE

Breadth of vision is developed by study and reflection. And for this, time is needed. Time can only be bought by realising the ambit of each rank/appointment and working largely within this. Interference with work of subordinates would give the impression of being busy and employing one's time fully but this is a fallacy. The idea is not so much to keep busy outwardly but to prepare for the existing rank and at least one above. Here, it would be pertinent to realise the restriction inherent in our system in the exercise of the rightly highly rated need for initiative. In the Army, the task for the lower commander is always laid down with any terms of reference. Initiative, therefore, does not lie in the selection of the task but in the method of achieving the task. All commanders have ideas on how a task should be carried out, but interference in the execution by the subordinate commander amounts to curbing and inhibiting initiative. All the more reason, therefore, for leaders to stick to their levels. But he

has to keep an eye to ensure that things are moving in the correct direction.

We have all indulged in such self brainwashing that any time during office hours, when paper work or visits do not occupy us, we feel guilty of not working. In peace time, it should be normal to have at least 1/3 of the time daily available for study and thought. To a superficial observer, this might appear to be waste of time, but in reality is the best spent period in terms of efficiency, in the long run. Time spent in studying a map, for instance, can never be wasted.

Availability of time in war is at an even greater premium for generals. Only time can enable the digesting of the current and changing situation and enable thought on present and likely future actions, continually assessing enemy intentions. Experience tends to suggest that too much time is spent by generals in visiting forward units/Headquarters. During such times, the general is out of touch with his staff and other sectors, he is likely to get unduly influenced by the local situation of the sector he visits, and he is devoid of all the advice and information of his staff. Visits to forward units/Headquarters are certainly most useful but their timing and frequency needs thought. Visits during a lull period, or to give backing/confidence during a critical stage or to inject firmness into a vacillating commander/situation are valid but not just to show the flag. And certainly not more than one down. Often visits are to get up to date information as our normal channels of communications are slow. There is a definite need to get information. This is best done by use of liaison officers, attached to formations as required, with direct communications with the higher headquarters. With fewer visits, generals need an incesive mind to be able to give suitable directions.

Finally, there is need for generals to be able to handle all arms. This has to be based on depth of knowledge leading to self-confidence and firmness.

Decision Making

It is a truism that decisions should be speedy and firm, being based on required and available information; this applies to all levels of leadership. Definition of speed, however, must vary with each level; the higher the level, the more time-consuming is the process of decision-making (till allegedly the ultimate pinnacle where files and matters can be conveniently lost). A move at company/battalion level requires little thought or poses minor problems; move of a division/corps, however, is a different affair requiring a lot of thought, organisation and information.

No one man can hope to remember all the variegated information and data. Consultation with the appropriate staff, therefore, is inevitable and requires time. The ultimate decision, fortunately, still remains that of one man and unlike civil/political processes, is not a group/shared decision. This can and should make for speed once the required data has been assembled. Staff work is, therefore, comparatively more important at the higher levels. A general must, therefore, gear his staff machinery accordingly. He must develop the faculty of listening attentively and grasping the main ingredients quickly.

Time can also be reduced by the self-study put in by generals. At the higher levels, given reasonable intelligence and staff procedures, there can be no sudden new situation requiring immediate decisions. Political and other factors become manifest early but require constant study to think ahead as to the various and likely contingencies. From the military angle, even the Bangladesh situation cast its shadow ahead. Speedy and correct decision-making is, hence, facilitated by a constant review of contingencies by generals (and staff) to include factors of terrain, movement, logistics and own/enemy resources. A hasty decision by a general based on inadequate information will often lead to problems and changes that are avoidable.

CORRECT ANTICIPATION

A decision at higher levels involves execution at lower levels. A higher-level decision is an order for a lower echelon, which has to be capable of fulfilment within the resources. This is ensured by the general *thinking* two down. The task set, however, must be only one down, leaving the initiative for the actual execution to the appropriate levels. This further involves correct anticipation. The higher the echelon, further ahead must be the anticipation and earlier is the need for a decision for it has to percolate down and be implemented in time. A mediocre decision given in time will produce better results than a good decision given late.

The task set must, obviously, be clear and unambiguous. Terms of reference regarding resources, timings and the like must be included. Such procedures also involve personal discussions. Care must be taken not to interfere unnecessarily.

Calmness and sober thought are important factors. A general cannot afford to base decisions on revenge, pique or dignity. When such thoughts are making the mind boil, it is best to delay till the faculties are back to their normal composure. Tiredness, mental and physical, is another factor that affects decisions and it may not be possible to delay.

The mind then needs to be trained to make a deliberate effort to concentrate; following the normal procedures of getting information/advice also can act as a 'check list' to minimise mistakes in judgement. All this needs practice.

TENACITY

A decision once made and issued as suitable instructions for execution, has to be pressed to fruitation. The executing agencies are subject to fatigue and personal danger. The execution involves action and reaction of own and enemy forces and commanders. All these factors will throw up problems and create new situations. There will be pressures, direct and indirect, to make changes, may be, in the pursuit of short-term political/propaganda gains in the way of geographical locations.

Tenacity of aim and purpose demands that such pressures and situations are judged dispassionately and objectively within the overall concept of the decision made and dealt with accordingly. The battle of wits with the enemy has to be won and often tenacity is the difference between success and failure. A general not only has to be tenacious himself but has to instill it in others. Depending upon the importance of the task, appropriate risks/casualties have to be accepted. Often the general will have to provide the firmness for continuing action when a commander or a situation is vacillating. Ideally, subordinates and staff should be motivated by conviction which would avoid silent resistance, particularly to hard and unpalatable decisions.

Just as a very thin line divides flexibility and indecision, so does a very thin line divide tenacity/firmness and stubbornness. Judgement of these lines is difficult and both are to be guarded against. At times, just that extra push can mean success and at others it might amount to avoidable casualties in pursuing a failed line of action. This again is a command decision dependent upon the reading of the situation by a general. Tenacity is not displayed by the number of casualties or pursuing the same course of action but in utilising all resources to achieve the overall aim, with suitable shifts of line of action if required.

An example from our operations in Bangladesh is very apt. At one stage, the aim was to secure Chandpur. Laksham, a very strongly held position and a geographically prominent place, blocked the way. Pressure from the very top was to get Laksham "tomorrow". This was rightly and judiciously disregarded as it involved excessive and avoidable casualties. The same overall aim was achieved three days later by containing, by passing and advancing which secured Chandpur, forced the enemy to evacuate and enabled a big haul of prisoners fleeing (a

very sorry state even for an enemy). All this at minimum loss of time and own men. An attack on Laksham would have jeopardised subsequent advance on Chandpur.

COURAGE

Taking physical courage as a common denominator, the higher echelons of leadership need more of moral courage and robustness. Moral courage has two aspects. First, to resist undue pressure from the top instead of just acting as a post office between the senior and subordinate. Every commander must be able to stop the buck at his level. Conviction, based on mature thought, must be backed by moral courage to lead to success.

Secondly, to be able to issue and have carried out orders essential for a task irrespective of their unpopularity or sentimental considerations. Operational tasks involve casualties and risks which can be minimised with due thought and planning but cannot be totally eliminated.

INSPIRE CONFIDENCE

By the very ntaure of his status, service and exprience, a general starts with the in-built advantage of inspiring confidence unless proved otherwise. Some have the added assets of a commanding physical personality but not all of us are so lucky.

Our men are good judges of character and in spite of the limited contact between a general and a jawan, assessments are made shrewdly. These are based on : first, the superficial view which includes the physical appearance /outward behaviour and bearing. Talk with JCOs and men during short visits, barakhanas and the like go a long way in helping the JCOs and men to make an assessment. In this, a sense of humour and genuine concern for men's welfare go a long way. A confident and understanding general, with strength of character/integrity exudes his own peculiar magnetism which can be as effective as a purely physical personality, and certainly more lasting.

The second more important basis of assssment is the effect of permeation. A general's policies and concerns are translated into action by normal channels of lower command. The reaction of subordinate commanders to such policies is importatnt as the JCOs and men soon get a feel of this. The effect of permeation on the men is actual and yet slow and invisible.

The higher an officer rises, less the direct contact with men. A general must, however, find ways of keeping in touch with current problems among the rank and file; then only can he retain and display a human touch and concern. Our profession involves the supreme sacrifice if warranted, but

still the men cannot be treated as cannon fodder. A general has to create the confidence that all is being done to minimise casualties and hardships. His plans should actively cater for this and the feeling will soon permeate to the men.

One frequent cause for lack of confidence is undue interference by a senior which causes resentment. Faults must be checked but in a suitable manner to avoid resentment. The ideal, of course, is to ensure proper professional competence among subordinates who must then be backed or sacked. Subordinates should be made to do their work, accepting genuine mistakes as help towards learning and future competence; better that mistakes are made in peace time rather than war.

Some generals, fortunately only few, believe in getting work through pressure, browbeating and by being a terror. Such generals feel that they are sorting out the lazy and incompetent. The frightened scurrying of subordinates convinces them that work is being done efficiently. But how wrong they are. All that has happened is the creation of conditions, which force subordinates to resort to deceptions, subterfuge, evasions and lies to avoid the brow-beating and tongue-lashing. And in battle, such generals will be let down. This is not to suggest that generals should be docile; but firm, fair, approachable and yet exuding a certain awe that prevents undue familiarity and questioning of orders.

In the process of issue of orders, planning and execution, a stage is always reached when events take on their own the last-minute coordination. This is the time for generals to inspire confidence by showing confidence in the plans and abilities of the executing agencies. Suggestions which indicate doubts (like reminding Infantry to carry digging tools) can be bad. During the last stages, in fact, complete confidance should be expressed.

The 1965 war produced a rash of sackings of subordinates; there is a feeling that this was mainly a pre-emptive strike by seniors for their own protection. This may or may not be true, but it is a fact that such large-scale sackings can only lead to a crisis in mutual confidence. It is incumbent on a general to have broad enough shoulders to accept credit and blame; or rectify mistakes of subordinates and ensure their correct selection, in time.

TRAINING

The teeth arms are unfortunate that their profession cannot be practised full in peace time. Preparation for war, therefore, is not under the best conditions and vital factors of live enemy and danger are missing.

Commanders, especially in the higher echelons, are comparatively better off, however, as duplication of the stresses and strains that they are liable to be subjet to, can be more easily done. The higher the leader, the less the elements of personal danger and direct enemy encounter.

Training of higher leaders is required basically in decision-taking. This has two obvious stages of theoretical knowledge and application, the main difference between the two being the element of stress and strain.

THEORETICAL KNOWLEDGE

This is being imparted through courses, TEsWT, officers training and the like. Such training brings out the process of thought required and the factors affecting the particular situation. Training normally is for that rank and one up. The Junior Command, Senior and Higher Command courses prepare an officer for ranks upto brigadier.

Such training, however, is purely theoretical and suffers from the following shortcomings :—

(a) The stress and strain of war is missing;

(b) Work is in syndicates which produces compromises and hence conventional solutions;

(c) Time element is largely missing;

(d) A lot of information is given on a plate; and

(e) Solution/plan of previous requirement does not normally form the basis for the next situation. Situations are, hence, in isolation and command decision minimum. And above all, this is not training in the art of command.

Courses, unfortunately, tend to be given undue importance because the gradings on these constitute a visible measure by which to judge competence. The absence of the vital factors of enemy and stress/strain is accepted as natural and hence an officer's reactions in actual battle are not fully known.

A special word is warranted about the Staff Collage. This produces staff officers of grade 1 level. But it is not, *ipso facto*, mean that a non-psc cannot be a good staff officer or commander, though in practice this seems to be the view (one of the best generals tactically, in battle, staff work point of view and human factors, I have served is non-psc).

APPLIED KNOWLEDGE

In war, the more important aspect for generals is application of knowledge. This comes with practice and exeerience (the analogy of the two

doctors, both M. S qualified but one just starting and the other with years of experience, is apt).

At present, practice and experience in being gained while actually holding the appointment, say, of brigade or division commander, some time is inevitably spent in settling down and making mistakes. Considering that the tenure is normally around two years, there is little opportunity to train for the next rank also. We must remember that for all important events, the permanent incumbent is made to be present and hence subordinate commanders do not get the chance to train one up practically. Mundane/routine work keeps all too occupied for serious study for the next echelon.

Like in theoretical courses, the need is to train commanders one up practically, before the officer actually takes up that appointment. This would minimise the fumbling and mistakes currently taking place while learning on the job. Our wars are likely to continue to be of short durations where such fumbling cannot be accepted.

How is this to be done ? Some suggestions are made in the subsequent discussion. During practical training, the following atmosphere needs to be created:—

(a) For generals and staff, all actions and timings must be actual;

(b) A minimum spell of intensive activity in war is 7 to 10 days. Such training should, therefore, last a period;

(c) Physical stress and strain should be actual. Actions of commanders/ staff must, therefore, be actual;

(d) Appropriate battle noise must be reproduced. This can be tape-recorded;

(e) Communications and distances must be realistic;

(f) Enemy reaction must be represented. This can be fed by the control staff.

(g) A commander's plan must be allowed to proceed unchanged by the control staff, except as decided by the commander himself due to enemy situation; and

(h) A series of such exercises would be required per commander, to give him confidence.

One method of achieving such training can be during normal exercises. For this, the exercises would have to be at least of a week's duration. Officers should be made to function one up. Considering problems of other commitments and resources, not more than one brigade could be exercised at a time in a division.

The better method would be to base such training on the existing Junior Command, Senior Command and Higher and Staff College courses, all acting one up; obviously only selected students could participate, the others providing the various control staff along with Directing Staff of each course. Selected brigadiers should be nominated by Army Headquarters to act as division commander.

All these students would have to concentrate at a selected place. Each war-game course would consist of three 7 to 10 days' legs representing different operations, with rest and summing up between each. Three such courses should be possible in a year.

Each operational exercise leg should be based on an actual operation carried out during our wars since Independence. Changes can be effected by varying the enemy reactions.

Though deployment of actual troops would add to realism, this is not necessary for decision-making at the general's level. Lower control should be able to depict the required situations and atmosphere to the company commanders; from thence upwards, all actions would be actual.

All this would no doubt require a lot of effort and coordination, a special cell might even be required for the eoordination. The effort, however, would be worth the benefits and experience that would accrue to the higher leaders. Given the proper atmosphere of stress and strain, time, follow through on plans made and enemy reactions and judgements, Commanders must obviously emerge as better Leaders with self-confidence.

CONCLUSION

Leaders (generals) in the Army can be made with training. This training has to be as realistic as possible.

Our wars are likely to be fast and of comparatively short duration. This makes it essential that generals make the least mistakes and there is no fumbling. For this, generals must be trained for their appointments before taking over.

Decision-making is the most crucial aspect in war in the higher levels. Training for this can only be realistic under the operational atmosphere be -ing duplicated. Given the thought and effort, this can be done; our present system does not cater for this.

'GOOD-BYE' ! THE MULES

MAJOR D K BHULLAR

The mountain gunner appears to have seen his last day. Gone are the horses, the mules and the swanky glamour that is so much a part of horsey life. What remain are probably the little remembered Kipling's "Mountain Gunner Song" and the saddle stools in the officers' mess bars. What has prompted the changes ? Why have they been made? Are they justified and, if so, to what extent ?

There are hordes of points in favour of retaining mules in the Army in general and the mountain artillery in particular and, no doubt, a number of convincing ones against it. The question is: can we meet our logistic requirement, including artillery support in the mountains, without the mules ? Have we forgotten the bitter lesson the Chinese taught us in 1962 or what the highly mechanised French and American armies have had to learn at the hands of a vasly inferior North Vietnamese army, whose only superiority lay in the tremendous mobility of their infantry (individual) soldiers.

Do we have to forget that the primary requirement in the mountains are stout legs, stout hearts and the ability to coexist with the mountains as against having to contend against them ? Mechanisation of the army and making it mobile in terms of modern armies is a secondary requirement.

Do we also have to forget the capabilities of the Chinese in a future war? Is there any other army as ruthless and determined and skilled in unorthodox warfare as the Chinese army is? Or has the victory in Bangladesh led us to underestimate our enemy along the northern borders? These are important questions requiring a dispassionate study.

A GLIMPSE INTO THE HISTORY OF ARTILLERY

Pack Artillery (later better known as Mountain Artillery) came into existence in the middle nineteenth century for operations in North-Western Frontier Provinces of the former British India. Since then, the mountain artillery, mainly functioning as independent batteries, has seen action in the Middle East, North Africa, World War I and World War II. In fact hardly a year went by without the mountain artillery having to go without active

service. The history of mountain artillery is full of meritorious service of a very high order; in fact there has never been an occasion when the mountain pack artillery failed to bring credit to its great name. There has not been a single instance, including the 1962 war, when the mountain artillery eqipped with mules has lost a single gun.

In the whole of the 1962 war, there was only one mountain battery with animals that formed part of the forces on the Indian side. The gunners had to take their share of the humiliation of that war. The only battery that came out intact without losing a single gun was 7 (Bengal) Mountain Battery, the only battery to have brought some credit to the name of gunners in all aspects. No doubt ! the state of communications were not so good, yet the single road there had been cut off at innumerable places by the enemy, making road movement highly inexpedient.

Our mountain divisions have to be highly mobile to take on offensive operations however limited and must, therefore, possess capabilities to move off the main roads. Whether this mobility is provided by the mules, or helicopters or for that matter a combination of the two is to be seen.

In peace time, improved road communications have made our logistic support extremely easy and have made the hitherto forbidden Himalayas largely accessible with a network of parallel and lateral roads. This has also helped strategically in bringing this part closer politically to India making the rear area in a future war more stable and safer.

However, in any future war, except in the initial stages, the use of these roads will have to be discounted. It would be highly inexpedient and uneconomical in manpower resources continuously to resort to clearing enemy roadblocks. The only remedy will lie in earlier dumping of stocks and material and subsequent supply by air and the ability to retain mobility in the face of non-use of roads and under all forms of weather conditions. Including the capability of the enemy to reduce our mobility.

HELICOPTER VERSUS MULE

The aphorism that helicopters have revolutionsed mobile warfare appears to have gripped the minds of modern armies. The advent of armed helicopters, air cavalry squadron, aerial artillery battalions, attack helicopter squadron, air cavalry combat brigades and TRICAP divisions has become the thing in mobile warfare in the NATO forces. So much so that even certain developing countries like India have not been far behind in their attempt to modernise their armies on similar lines. Whereas in reletion to operations in the plains, it is undoubtedly a step in the right direction, especially against such a conventional enemy as Pakistan, any

such attempt in relation to operations in the Himalayas is fraught with grave danger, unless made judiciously and with extreme care. The Chinese and the countries following their concept of warfare have been known to turn their enemy's advantage to their disadvantage. We may have an initial advantage in own area in the use of air transport, including helicopters, but we cannot expect to have it for long. The Chinese are vastly superior in their air force and are highly adept in the irregular warfare that includes large-scale infiltration and guerilla fighting. It is improbable therefore that they would give us much of a chance to use our air effort as effectively as we think we can. We must be prepared to write off many helicopters. Can we afford to lose that many and do we in the first place have resources to field that large a number? Use of helicopters definitely affords lots of advantages, but its disadvantages are probably more crippling should the enemy be able to counteract effectively.

Use of helicopters provides the following advantages:—

(a) Flexibility;

(b) Mobility;

(c) Reduced reaction time;

(d) Early reconnaissance for finding and locating the enemy;

(e) Providing the support at the right time and right place by lifting artillery units/sub units as required;

(f) Capacity to provide logistic support even at high altitude, hence reducing reliance on roads and even animal transport, whose own domestic loads at times outweigh their useful employment;

(g) Ideally suited for reinforcing a threatened point/sector, by using the helicopters of the artillery and logistic units;

(h) Ideal for supporting independent missions by units/formations along axis off the roads; and

(j) The most effective method of evacuation of casualties in war.

All these advantages are subject to one big 'if'. If only the weather conditions allow and the enemy allows. Coupled with the problems of weather and possible enemy air and ground action, the use of helicopters will also be subject to the following limitations :

(a) Economic stringency;

(b) Scarcity of petrol and kerosene;

(c) Terrain. Not all areas in the Himalayas allow manoeuvre by helicopters and preparation of helipads also requires some time;

(d) Performance at high altitudes is not as good;

(e) Replacements will be hard to find; and

(f) Night operation not possible.

THE MULES

Having discussed the above, it leaves one in no doubt that the best bet under all conditions is the mule. It has no doubt certain basic vulnerabilities, like being subject to disease and objective hazards. It requires vast resources in rations to feed it and in case a column is required to be self-sustained over a week, an AT column may be able to carry hardly any useful loads. But all these limitations are nothing new, they have been encountered and overcome in the past. The mule, if properly led and looked after, can go where man can and can be made to sustain itself on extremely hard scale of rations. Use could be made of local resources and the mules fed the way local ponies are.

We are apt to confuse the mobility of the individual soldier with that of the mobility of a whole force or even armies. What the mountains specially require is individual mobility and only very limited higher forms of mobility. One can hardly conceive of a force advancing beyond twenty miles in operations in a day. Where then is the need to rely entirely on fleets of vehicular columns (an extremely tempting target for enemy ambushes) or their counterparts in the air with no better let up from the enemy.

We might as well realize that the day we can learn to coexist with the mountains, become acquainted with the various foottracks and bridle paths, learn to live off them, we shall no longer find it necessary to look over our shoulders to see weather the helicopters will be able to come to our help.

SUGGESTED ORGANIZATION

The following artillery units/logistic support units are recommended in the mountains :—

(a) One helicopter squadron under each corps to be used when required;

(b) One Mountain Regiment (pack) with batteries affiliated to each division for all operational purposes;

(c) One light battery (pack) as corps troops; and

(d) One AT Coy ASC (GS Mules) per mountain division.

Helicopter Squadron : This could be used concentrated or distributed as the requirement may be. It should be closely associated with artillery and could well be allotted to this arm for all purposes with the role of

meeting the logistic requirement of the corps, for which the helicopter has been specially designed.

Once the economic state of the country changes for the better, the helicopters can be allotted at a scale of a squadron per mountain division.

Mountain Regiment (Pack) : This visualises the transfer of all MA mules presently held by the ASC Coy (MA mules) to the artillery, hence no additional expenditure to the exchequer. This will facilitate the users being more conversant with pack gun drill and animal management, better training and the consequent espirit-de-corps that went largely to motivate the erstwhile mountain gunner. There has been a tendency to dismiss the requirement of horses for tactical employment in the mountains. While this is largely true, it must be remembered that life with mules is a hard one. Unless there is something to compensate for it, no officer or man is likely to volunteer for posting to a pack regiment. There will then mostly be disgruntled persons, forced to a life they would want to be rid of.

The requirement of keeping at least one battery mobile on AT to accompany a brigade group off the axis remains permanent; hence just as well that such a battery is kept ready for task assigned to it, rather than to put up a highly unsatisfactory ad-hoc arrangement.

Light Battery (Pack) : Since heavy mortar is suited for operations in the mountains, it is desirable to keep this element mobile in the basic sense, provided also with the facility of moving it by helicopter if required.

AT Coy (ASC) : No change of allotting an ASC AT Coy (GS mules) per mountain division is recommended.

CONCLUSION

The spectrum of Mobile Warfare has posed us with a number of possibilities and also problems. At a first glance, it appears extremely tempting to fall in line with the supporters of mechanisation of the modern mountain divisions and placing over-reliance on the use of air support, in particular the helicopters. But a closer study reveals the grave consequence of such a move, in fact a slight reversal of the organisation of the mountain artiliery is called for.

In the Himalayas, we shall be fighting no ordinary enemy. We must be prepared for the worst both from the enemy and the weather. Use of helicopters should be made to augment our basic mobility and not to replace it. Like it or not, the mule remains for ever the best prime mover in the mountains.

AN ANALYSIS OF OUR TRANSPORTATION SYSTEM

LIEUT COLONEL Y A MANDE

THE importance of mobility in the conduct of warfare is well appreciated. But it must be stressed that, mobility must be considered in its entirety, in that, mobility in the rear areas is as important as battle-field mobility. While considering mobility of the armed forces, the utilization of civil transportation agencies of the country should also be taken into account as they play a very significant role in the total war effort.

During the post-Independence wars, we have gained considerable experience relating to movement of men and material. Speed is and has been the crux of the problem of mobilization in which both military and civil transportation agencies have performed a remarkable role.

The essence of mobility lies in central planning, coordination and control. In our army, we are still following the pattern inherited from World War II.

EXISTING ORGANIZATION

Before we analyse our present system of transportation, it would be worthwhile to consider, in brief, our existing transportation agencies.

RAILWAYS

The Railways are operated by civilian organisation. Control on traffic relating to military movement is exercised by Director of Movement Control. We also have a few units of TA and Engineers to meet emergencies and to assist where required.

ROADS

Movement by road is carried out by units of ASC—MT and AT companies. During the last two wars, civil transport has played a commendable part. Arrangements now exist to raise civil transport columns as and when required. Control on units connected with road movement is exercised by Director of Supplies and Transport.

AIR

Movement by air involves altogether a different service ie Air Force, who provide transport aircraft. Also connected with air movement are Air Despatch Companies of ASC, who perform the functions of packing and dropping stores by air.

SEA

As far as land forces are concerned, the requirement only relates to organisation for receipt and despatches of stores at harbours and ports of entrance. The Embarkation Headquarters are controlled by the Director of Movement Control. To meet emergencies, we also have Dock Operating Companies, staffed and controlled by Engineers.

INLAND WATER TRANSPORT

IWT companies are operated and controlled by the Corps of Engineers.

ORGANIZATIONAL ANALYSIS

Having considered transportation agencies, we can proceed to examine the organization of its transportation system. I intend to analyse the present organisation in the light of established theories of organization as advocated by Classical and Scientific Management.

DIVISION OF LABOUR

Adam Smith's description of manufacture of a pin is very often illustrated as a classic example of division of labour. Adam Smith says that a worker by himself may produce only 20 pins a day, but if the process of making pin is broken into many simple operations, 10 workers might produce as many as 48,000 pins in a day. This simple example aptly describes the importance of specialization. Not only that work is broken into bits according to specialization, but organization itself, at a unit level, is structured according to similarily of function. Thus the division of transportation units according to specialization such as Dock Operating Companies, MT Companies, AT Companies and so on is perfectly sound. It meets the requirement of similarity of work, process and singleness of goal. There is, however, major brawbaek. If we look at the transportation system as a whole, it does not meet the requirement of specialization according to clientele. This means that work directed to serve a specific group of clients is placed in one department or service. As far as transportation is concerned, the clients are troops and therefore all

transportation units should be under one department. To give an example, let us take the case of troops, who have to move from place A to B. They are not concerned whether, the move is by air, rail or road and, even if all the transportation agencies are involved, they would like to deal with only one department of the army. This aspect will be further clarified by Unity of Control.

UNITY OF CONTROL

Any task, once it is broken into number of components, requires supervision and control. This brings levels into consideration and finally the entire organization assumes a pyramidical structure. The division of labour must be balanced by unity of control and finally the entire system must have only one Centre of Athority. This is a major drawback in our transportation system. It is a Hotch-potch of various branches in the army and the Air Force. If we consider transportation as a whole, the present system is a conglomeration of Movement Control, Engineers, ASC and Air Force. Following are some of the serious drawbacks due to negation of the principle of Unity of Control.

Lack of Centralized Planning. At present, it is not possible to have any centralized planning because of a number of branches and different services involved. Lack of centralised planning results in uneconomic allocation of resources, infructuous expenditure, mushroom growth and finally affects orderly execution. Systems Approach is not possible. It is difficult to identify bottlenecks. Diversity of control leads to uneconomic expenditure in training, coordination and staff works.

Lack of Coordination. Communication at every level, sideways or up and down, is subject to distortion. It promotes "Buckmasters" and in this case according to Parkinson those who do it "sideways". There is a problem of decision-making due to number of heads involved. Because of a number of branches, all communications and decisions must be reduced to writing, files must move from place to place—in short, red tape must increase. A number of branches leads to conflict and the settlement of conflict at the top level is by no means an easy task.

Lack of Flexibility. Centralization helps in planning, utilization and allocation of resources. Let us take an example. Suppose a section of railway line is disrupted, the problems would be (a) Whether to divert the traffic on a longer rail rout, (b) use road transport system, or (c) transhipment by air. This simple problem, under the present system, will take a long time. It will raise numerous questions such as who all are to be informed, who is to take the decision, who is to execute, and if any

agency in the long chain poses problems, the entire operation will be delayed further. Needless to say that such operation will be carried out very efficiently and smoothly in case the principle of Unity of Control is observed.

AUTHORITY, RESPONSIBILITY AND ACCOUNTABILITY.

The co-relation between authority, responsibility and accountability is only possible in the case of unity of control. If we take our transportation system—the army has no authority on air transport, Director of Movement Control has no authority on IWT Companies of Engineers or MT Companies of ASC and so on. Violation of this principle of organization can easily lead to confusion.

To conclude, our transportation system is full of flaws according to concepts of organization.

It has done a good job, but what has been good in the past or present may not be good enough for the future.

Let us now consider the factors which warrant a change in the existing system of transportation.

CHANGED CONDITIONS

The army today has become a big organization. The requirements of forward troops are ever increasing in nature. Logistics has two basic aspects—(a) Men and material, and (b) Movement. Given that men material are there, movement becomes a major problem. Men and material require long-term, gradual planning, whereas movement is always a rush problem. During emergency and operations, it is transportation which counts. From the wars, we have seen it is speedy movement (and not men and material) which has been the bottleneck.

Ours is a big country. Men and material are spread over. Troops are located communications-wise in difficult areas. Movement was a simpler problem when the war was fought only on one front as it happened in the pre-Independence period in NWFP and Burma. Today, our transportation system must be capable of sustaining war on more than one front. The fact that our transportation agencies and communications have not been subjected to enemy action must not be taken for granted.

Our peace-time locations, due to various reasons, are far away from war-time locations. Our transportation system must meet the requirement of quick mobilization.

There is a growing demand for army aviation. It is a subject by itself and I do not intend to discuss the pros and cons in this article. One can safely assume that army aviation will come in as and when resources permit. What is important is to have an organization which will absorb army aviation without any difficulty at a later date.

Very sophisticated type of MT equipment is coming in and more will come in in future. This calls for specialized units. A vehicle is not first-or second-line because of the type of vehicle but because of its role. Thus APCs can be first-or-second-line transport. All this requires an organization which is geared to accept new changes and new equipment without undue strain.

CHANGING NATURE OF ORGANIZATION

Organizations change, they are never the same, and change is the sign of living organization. The reasons for change are different; it may be due to introduction of new weapon, change in doctrine, increase in work rationalization and so on. The Army is not new to introduction of new organization or re-orientation of existing organization. For example, Signals have separated from Engineers, a noteworthy development has taken place in the organization of administrative services and the latest is the formation of Army Postal Service.

It is time that we seriously consider integration of transportation units into one service. Integration will optimize the efficiency of transportation units and the system as a whole.

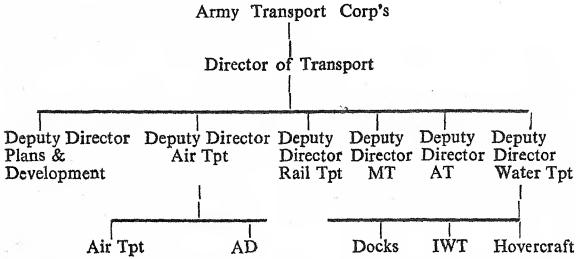
Army Transport Corps is not a new concept. It is in existence in most of the foreign armies. The notable exceptions are India and Pakistan. A joke goes that we wait for each other for organizational changes; let us see who takes the lead.

A change always brings in change-resistance. The phenomenon of change-resistance, although natural, is perhaps the biggest block in organizational development. There is also a marked difference in organizational theory and practice. In practice, many other considerations play their role such as paternalistic desire for retention of old bonds, views of charismatic kind of leadership at the top, empire-building and so on.

The situation as it exists today is most ideal for re-organisation of our transportation system. After every war, there is a pause when armies re-group, re-equip and get ready for the next.

SUGGESTED ORGANISATION

Suggested line-tree organisation at the level of Army Headquarters for the new transportation system is shown below.



The above organization shows only barest details. The Corps will be represented suitably at Command, Corps, Division and possibly at Brigade level, and work under QMG's Branch.

One may ask which arm or service will form Army Transport Corps. Any arm/service rivarly or contest would be futile. It would be a new Corps and existing transportation units will be transferred en bloc to the Corps.

Another question which would be important to consider relates to difficulties and time required in the formation of the new Corps. I do not think it will present any difficulty and the time taken to form the new Corps would be negligible. To illustrate this point, let us consider each aspect of organizational tree-chart:

Director of Transport. This does not involve creation of a new appointment. The existing Director of Supplies and Transport can perform this function, by shedding off responsibilities relating to supplies. Supplies can be transferred to Ordnance as is done in some of the foreign armies or a new Corps formed.

Deputy Director, Plans and Development. This section will be concerned with plans and development relating to transportation. They will establish liaison and advise civil bodiss in the construction of rail and road network.

Deputy Director, Air Transport. Till such time we have army aviation, Deputy Director, Air Transport should be an Air Force Officer,

He will exercise control on resources alloted to him by Air Headquarters. Air Despatch Units of ASC can be transferred en bloc under him.

Deputy Director, Rail Transport. The existing Movement Control Organisation and TA units of Engineers can be transferred en bloc under DD, Rail Transport.

Deputy Director, MT. All the MT units of ASC can come under this section. This organisation is well orientated to take the future needs of APCs, heavy and specialised transport as and when introduced for second-line duties.

Deputy Director, AT. All AT units of ASC can come under this section.

Deputy Director, Water Transport. Existing Director of Transportation in E-in-C's branch, with his Dock operating and IWT Companies, can now form part of this section. This section is well orientated to take hovercraft as and when introduced.

CONCLUSION

Movement in the rear areas plays a very important part in the conduct or warfare. Movement involves use of both civil and military transportation agencies.

Our transportation system suffers from multiplicity of control. Unity of control in any organisation is essential for centralized planning, decision-making, flexibility and efficient execution.

The size of our army, the size of our country, complexity in equipment and paramount importance of speed call for re-orientation in our transportation system. There is a need for the integration of all transportation agencies into one Corps.

It is time that we form an Army Transport Corps in our army. The new Corps will cater for army aviation and sophisticated form of transport which are likely to be introduced in our army in future.

The concept of Army Corps of Transport is not new. It has stood the test of trial and is in existence in most foreign countries.

The formation of Army Transport Corps should not pose any problem in terms of time and structuring difficulties. It merely requires regrouping and re-organizing various elements which are already in existence. Is it then not worthwhile to reorganize our transportation system for economy and efficiency?

SIGNIFICANCE OF MORALE FOR TROOPS

DR A K TYAGI

THE advent of the democratic system in the Western world brought revolutionery changes in national values emphasizing human rights. These new ideologies affected Army 'role' and loyalties. It became 'national army' serving the cause of the country. Loyalty was no longer to the king, but to an institution. A chain reaction started. Well-thought-out programmes of training to inculcate new values in soldiers were initiated in every country. The style of leadership underwent a great change. Officers who commanded with rules and regulations were forced by circumstances to show greater concern for the welfare of the soldiers to gain their cooperation. The commanders realised the need to keep constant vigil on the level of morale of the soldiers.

WHAT IS MORALE ?

Morale in military context is more than just cheerfulness, ready obedience and smartness. It is a state " when men can carry on with strong determination, sometimes even with zest, through injury, disease and physical privation..... for such morale one needs conviction." This statment of National Research Council U. S. A. (1943) is as good today as it was in World War II. Willingness to sacrifice one's life for achievement of the goal is only possible when such conviction is deep-rooted in value systems. Some prominent social scientists have expressed the same ideas in different words. Mary Cushing Neil has described it as "capacity of a group of people to pull together persistenly and consistently in pursuit of a common purpose." Cattell and Stice regard morale as "characterised by maintenance of effort and resistance to group dissolution". For Child (J.L.), morale in the case of an individual is "a condition of physical and emotional well-being in the individual that makes it possible for him to work and live hopefully and effectively, feeling that he shares the basic purposes of the group of which he is a member." According to Krech and Crutchfield "morale refers to the level of group functioning, the unity and solidarity of the group, its espirit de corps". Allport regards morale as "the degree of unity of effort within a given group and the determination of the group to achieve a common goal."

INDICATORS AND DETERMINANTS OF MORALE

Social scientists have listed a number of variables that indicate level of morale. According to J. S. Gray motivation towards high productivity, satisfaction with job, effective steps in crisis, desire to remain with the organisation, acceptance of necessary changes without resistance or resentment and attempt to promote organization were good indicators of morale. Dr. Leighton had presented a different list of such indicators. In his opinion confidence of individual members of a group in the purpose of the group confidence in the leadership at all levels, mutual confidence of the members, and organization efficiency were signs of good morale. According to A. J. Marrow, the level of morale was dependent to a large extent upon workers' attitude toward the future. The morale service division of the U. S. Army had listed the following facters as indicators of morale (World War II Studies):

(i) Faith in the cause and future;

(ii) Pride and confidence in the output;

(iii) Belief in the mission;

(iv) Confidence in training and equipment;

(v) Realistic appraisal of the job ahead;

(vi) Satisfication with the job assigned; and

(vii) Belief in the Army's concern for individual welfare.

The Public Opinion Research Unit at Princeton pointed out three indicators of civil morale. These were determination to achieve the objective, confidence in leaders and satisfaction with traditional values. Vernon reported an attitude study conducted during World War II that concluded that morale was marked with belief in bodily security, belief in economic security, belief in social security and leadership. G. Watson and Norman Maier pointed out that civilian morale was indicated by mutual sacrifice, participation in group activity, tolerance and freedom within the group and confidence in leaders. Krech and Crutchfield said; "High morale was a tendency of the group to hold together, through internal cohesiveness rather than external pressures, a minimal level of divisive friction, adaptability of the group to changing circumstances, substantial amount of 'Tele' among group members (feelings of acceptance), positive attitude of the members toward group goals and desire of the members to reatin the group."

GROUP COMPATABILITY

In case the members of a group were antagonistic to each other, the group could break easily and if the member and the group goals were incompatible, the morale was low. These observations were confirmed by

Jenkins with a study on two naval air squadrons. According to R. P. Calgoon, friendliness, cooperation, willingness to follow directions and effort on the job indicated the level of morale.

"Orderliness" and "efficiency" give wrong impression. These could be achieved through authoritarian pressure. Even productivity within a short time might not indicate level of morale. The United States Strategic Bombing Survey (1946) revealed remarkable ability of German workers to show high level production under desperate hardships though they expressed feelings of despair and defeatism and criticised Nazi leadership. The level of tension and unhappiness may not always be a reliable index of morale.

It would be appropriate to quote from the annual report of the Chief of Staff, United States Army (1933): "Morale cannot be produced by preparing or cuddling an Army, and is not necessarily destroyed by harhship, danger or even calamity. Though it can survive and develop in adversity that comes as an inescapable incidence of service, it will quickly wither and die if soldiers come to believe themselves the victims of indifference or injustice on the part of their Government or of ignorance, personal ambition or ineptitude on the part of their leaders."

Allen L. Edwards, based on the results of opinion polls conducted in America during World War II, maintained that confidence in leaders, willingness to sacrifice and agreement with Government policies were indicative of national morale. Civilian morale could be known by the degree of participation in salvage programme, blood-contribution, bond-buying drive and other activities of national concern. In the Armed Forces, it was indicated by desertion, suicide, disciplinary cases and malingering.

Morale is determined by emotional, social and psychological needs of the worker. Work is sought to satisfy these needs. These needs are classified as primary needs such as physiological and biological needs and social and psychological needs, like status, recognition, prestige, and achievement.

A particular need does not have the same effect on all the workers. Different types of workers were motivated by different needs. Maslow and Hetzberg had presented a model of need hierarchy. According to them, physiological and primary needs come first, then social and psychological needs. First of all, one would seek satisfaction of first-level needs andt hen he would try to satisfy higher needs.

MAINTENANCE FACTORS

Working environment, pay, security and monetary rewards acquired great significance as morale-booster during the 1930's and 1940's. Government legislation in the Western countries laid down minimum norms for

satisfaction of these needs. Industrial psychologists like Tiffin, Wilson, Brown, Watson, Viteles, Myers and others emphasised the fact that these needs affected the level of morale. Job satisfaction through monetary reward became the pet slogan for higher efficiency and the worker was regarded an "economic unit" whose inspiration was only money.

Trieb found low economic status positively related to low morale. He also found retirement benefits related to morale. Working conditions were found to be affecting morale by Osuge. Soon this movement lost its appeal and the investigators started looking for other variables that were more important than monetary rewards.

Social Factors

Scientists discovered that group relations made a lot of difference in the level of morale of the workers. According to these studies, some of the social factors positively affected morale. Krech and Crutchfield found that friendship among group members in work situation made happy group life. Kelly and Thibaut pointed out possible effects of friendship relations upon group productivity. Probably friendship made an indirect contribution by improving communications and work climate. Elton Mayo and Roethlisberger found social relation of great significance in production in their classical experiments at Hawthorn. Ven Zelst studied the effect of sociometric regrouping upon satisfation, turnover and output of the workers in the building trade. He found that persons who preferred each other's company if put in a team did much better than the mixed groups. Walker and Guest (1952) reported adverse effects on production, when the workers were isolated. Hoesfall and Arensberg observed that "more efficient teams indulged in substantially lower amount of social activity than did the less efficient teams". Deutsch found that cooperative groups were more effective and indicated a higher degree of member satisfaction than the competitive groups. Espirit d' corps has been named the most significant factor to determine morale by all military writers.

Psychological Factors

When basic physiological and security needs are satisfied, one looks to the satisfaction of ego or psychological needs. One desires status and position. Maslow had observed that managers achieved more job satisfaction through psychological needs. This observation was confirmed by Hertzberg. Basing his observations on an investigation, he concluded that "achievement, recognition and responsibility appear major contributors to job satisfaction." Hull and Kolstand said that recognition and respect always led to psychological satisfaction of the worker. Bucklow as well as Kunloff reported that autonomy in job increased morale and productivity to a very high

degree. Myers regarded achievement and recognition as significant factors for job satisfaction. Stouffer maintained that status, prestige and feeling of belonging to an elite group increadsed morale of the soldiers. He further said that awards and decorations resulted in higher morale.

Gurin, Veroff and Feld found that people in high-status jobs reported more ego satisfaction in their work than those holding lower positions. Porter said than "those who were in lower management positions were more dissatisfied than top-level managements." He found that higher-level employment offered more ego satisfaction, more status and self-direction.

Kennedy and O'Neil said that expansion of jobs tended to create more satisfactory attitudes than repetitive work. Kilbridge found no relation in morale and repetitive work. According to Hertzberg, job satisfaction was due to a sense of achievement, responsibility, advancement and recognition. Fromm held that psychological needs like individual judgment and initiative were more ego satisfying. Zaieznik, Christensen and Roethlisberger reached similar conclusions.

LEADERSHIP AND MORALE

There are hardly any studies in this area on military leadership. A few studies from industrial management have revealed that the method and quality of supervision as well as the manner in which authority is exercised by them are highly related to morale. Leadership styles, such as authoritarian or democratic and liberal, make a great difference to the morale of the workers. Kahn and Kalz found leadership related to job satisfaction. Krech and Crutchfield held " the permissive leadership .....promoted higher morale than did the restrictive leadership." It was further observed that "high-producing supervisors were found to supervise less closely than low producing supervisors. There was substantial evidence to show that lack of freedom resulted in dissatisfaction with the job, supervisor and the company." They further maintained that the high-producing supervisors were consistently liberal than low-producing supervisors." I. R. Weschler and Tannenbaum reported similar results. Mary Cushing Neil found decentralization of power and autonomy of work highly related to morale. Appreciation of work by the leader was considered important for morale by Dr. Charles Walker. John. R. F. French said that "the degree of morale shown by these group was proportional to the degree of participation they had in decision-making."

Foa found that sailors with authoritarian expectations were more likely to be satisfied with whatever behaviour was adopted by the officers than were sailors with less authoritarian expectations. Bidwell found that the congruent role expectations of administrators and employees led to

higher degree of satisfaction of the employees. Brazzial Mann and Williams discovered that administrative practices were directly related to the low morale of the employees. Suehr regarded communication the most important factor in job satisfaction. Leavitt reached similar conclusions in his studies.

A survey reported in the 'Psychology for the Fighting Man' revealed that morale of a soldier had high relationship with competent leaders endowed with necessary abilities required in their assignment, who could take quick decision, who had welfare of their soldiers at heart, gave clear order, showed no favours and gave proper recognition. Stouffer reported in 'American Soldier' that survey result showed that comparatively high proportion of combat flying personnel expressed satisfaction and pride in their military organisation. Other factors mentioned were attitude of their seniors and feeling of loyalty to other members of the group as well as feeling of dependence on each other. In a survey conducted by the author, it was revealed that "concern of officers for welfare of jawans" was highly related to morale.

Techniques of Morale Study

The most objective method of measurement of morale in industrial organizations is the trend of production. If the production chart shows consistent trend of increase in productivity, the morale can be taken as high. Other objective indicators are absenteeism, illness, number of complaints, strikes, resignations and other group conflicts. Few of these factors indicate morale of troops in peace. These factors are desertion, abence without leave, malingering and incidence of indiscipline. These could easily be recorded and measured but they do not reveal the real undercurrents of morale. These are some of they extreme symptoms which manifest in few extreme cases. The general morale of they group cannot be studied with this method. The attitude questionnaires prepared following Likert or Thurston methods are useful tools of study. In Defence Services in this country, administration of questionnaire is unsatisfactory firstly because the academic and general education level of the soldiers is low. Secondly, the soldiers are trained not to express personal views in the presence of outsiders. In view of these difficulties, only controlled interview is found to be the best method of measurement of morale. This method, of course, depends on the skill and training of the interviewer. Army being a highly formal organisation, it is difficult to build a reliable criterion to assess the value of the techniques employed to study morale. Stouffer in 'American Soldier' has recommended reference group as criterion for working out the reliability of morale studies.

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TICKELL—A FORGOTTEN GREAT ADMINISTRATOR

P C Roy Chaudhury

WE come across quite a few instances of great military administrators in India when, out of turmoil, British rule was established. They were full of the milk of human kindness and rose to the demands of exigency. Freshers in the military and with a tough training, they did rise to the occasion and evolved an administration that suited the particular part of the country and the people. Lieut. Tickell of the Ramgarh Battalion, who was taken out of the military camp and posted to Chaibasa in Bihar, was one of them.

In the early part of the 19th century, this part of Chotanagpur, which contains the largest iron ore and copper belt of India, was in the worst state of turmoil, confusion and internecine warfare and intrigue. The Hos, the Adibasis of the area, were sullen and would not allow any strangers to pass through their belt and even pilgrims to holy Jagannath (Puri) had to make a detour of seven days' journey to avoid the poisoned darts of the Hos. The Thakur of Kharsawan and the Kuer of Seraikella, who had entered into a sort of treaty with Capt. Forbes earlier, were themselves unable to do anything against the Hos and were secretly infringing the terms of the treaty. The Political Agent, Major Roughsedge, was constantly making route marches through the jungles and ravines in 1820 to keep the Raja of Singhbhum, the Thakur and the Kuer in check and to pacify the Hos and the Kols, the Adibasis of the area. The major had with him the Ramgarh Battalion and some irregular horse and he often took with him some of the Babus of the ruling families.

But this practice had little effect. It was decided to send a considerable force under the command of Colonel Richards to enter the interior of the Ho land and fight. After a month's prolonged hostility, the Ho leaders surrendered and prayed for direct rule. Unfortunately, this request was not acceded to and they were compelled to pay tribute to the chiefs. Detachments of troops were posted at Keonjhar, Bamanghati and Chakradharpur to keep both the Hos and Kols and the truculent Rajas under check. This policy of a veiled lack of trust in both did not pay any dividend.

In 1831, Mundas' revolt the Mundas of Chotanagpur rose in revolt and the Hos joined them. Euphemistically named the Kol rebellion, this was a common rise of the Adibasis against the way their lands were being frittered away and their religious beliefs were tampered with. It was a legitimate explosion of fires that had been smouldering for decades. Villages had been seized from the Adibasis and farmed out to the Hindus, Sikhs and Muslims from other parts of the country. The Kol revolt was widespread and a protest against the exacting *Dikku* (foreigner) landlord and the complacent British rule that allowed the landlords to do as they liked. The warring Thakurs and Rajas also joined the fray to loot as much as possible. This rising was somehow put down, again a patchwork. Sir Thomas Wilkinson, the Agent, decided to annex the whole of Kolhan, the heart of the Ho area, and this was done more by threat than by bloodshed. Wilkinson drew up a directive or guidelines to be followed to appease the Hos of Kolhan in Singhbhum district.

It was under such circumstances that Tickell was posted as the first British administrator in Chaibasa in 1837. Tickell was extremely sympathetic to the aboriginals and appreciated the causes of their frustration, their aspirations and their innate love for the homeland, their gods and religious beliefs. He had studied their problems deeply. Tickell's memoirs on the social customs and land system of that area are still refreshingly fresh and a watershed to the present administrators in that area. His articles were published in the Journal of the Asiatic Society of Bengal, 1840. Tickell was also a great naturalist. His study of the avifauna of the area was also published in the Journal of the Asiatic Society of Bengal in 1840. This is the first systematic study of the avifauna of the area and later attempts to improve on the list have always paid great compliment to that naturalist Tickell. Many of the birds he had noticed have disappeared now and newer species have been noticed. The study of the birds, which was an obsession with Tickell, took him to all the remote corners of his district and brought him in intimate touch with the people. That was the sole reason of his success as an administrator. He would sit on the *chatai* (mat) spread by the Adibasis, crack jokes with them and a drink of their homebrewn *handia* (drink).

ROADS AND SCHOOLS

Tickell opened up the district by giving it some roads, establishing schools that taught Hindi and Oriya, set up a number of *hats* and village fairs, encouraged sports like cock fights, etc. The directives of Wilkinson were improved upon by Tickell. He had direct contact with the Hos and depended less on the *do-bhashis* or interpretors and the local

chiefs. The indigenous institutions of *Mankis* and *Mundas* (the traditional Adibasi social and religious heads that decided ordinary disputes by arbitration) were reestablished as far as possible and the local administration was sought to be carried through their help. Tickell always wanted to follow the dictates of the Adibasi usages as he knew the way to touch the hearts of the Adibasis was through a regard for their customs and manners. Tickell was a pioneer anthropologist without any training and his example of chronicling the manners and customs of the Adibasis was followed by Commissioner Dalton whose Ethnology of Bengal is still a landmark. The administration of Kolhan area is still carried on, to a large extent, by the system that was set up by Tickell. The Deputy Commissioner's permission is still required for the alienation of any land of the Adibasis in Kolhan region.

As an ornithologist, Tickell is also remembered. He studied the birds in his district for seven years and then published his study. Many species not known before were described by Tickell and so far for many species the type locality is Dhalbhum (where we have Jamshedpur) or Chaibasa. Three of these may be mentioned : the long-tailed nightjar (*Caprimulgus macrurus*), the brown hawk-owl (*Ninox scutulatus*), and purple wood pigeon (*Columba punicea*). Some species have disappeared or become very rare such as black bulbul, ashy swallow-shrike, black and redheaded bunting, yellowbacked sunbird, green-breasted *pitta*, forest eagle-owl, green imperial pigeon, the Indian courser and the rosy pastor.

REBEL, KING AND STATESMAN : KING MAHENDRA OF NEPAL

(A Review Article)

PRAMOD KUMAR MISHRA

DURING the seventeen years of his regime in the mountain kingdom of Nepal, King Mahendra played a historic role, although a large section of the Western press rated him as an enigmatic personality. As a worthy successor of Shah dynasty founded by King Prithvi Narayan Shah, he continued to bank upon his tremendous popularity amongst the Nepali masses, most of whom are either illiterate or semi-literate. As one of the few surviving monarchs in the world and the only one reigning Hindu King, he used to draw large audiences wherever he went. For all practical purposes, he was both a head of state as well as a head of government and the Council of Ministers was merely his own creation and accountable to him alone. In terms of Real Politik within his own country, and as a charismatic leader, he was perhaps comparable to any other statesman of his time.

Y.G. Krishnasmurti, the biographer, has taken pains to drive deep in to the life of King Mahendra and has made an interesting analysis of his achievements as a statesman. Although he (the author) claims of presenting the readers an objective analysis, here and there he is subject to certain liable human errors. But his lucid style and beautiful expression is commendable. Although he has divided the entire biography into twenty-nine chapters, for the purpose of our evaluation, we would categorise them under the followingh eadings. At the outset, we will analyse the childhood and adolescence, then comes his youth and role as a crown prince. Mahendra's ascendening to the throne and his role during the short interlude of democracy in Nepal will draw our attention next. We will hereafter analyse the claim of Panchayat Democracy as a unique political style. Then Mahendra's role as a peace-loving monarch and his diplomatic style will be examined. Along with this, the need for international assistance in the economic development of Nepal will draw our attention next. Finally, we will try to assess the very litle of the book i.e. Mahendra as a rebel, king and statesman.

Mahendra's childhood was spent within the palace premises. The Rana oligarchs did not want him to see the light of the outside world. This

* 'Rebel, King and Statesman : King Mahendra of Nepal', by Y. G. Krishnamurti, Dawson, Calcutta. pp 302.

solitary confinement had its impact in his later life. Within the palace, he was accorded the loving and tender care of his parents. The author strongly feels that the little boy (Mahendra) had the scent of an artist about him (p. 22). It was because music was the only source of entertainment within the royal palace. Since his boyhood days, Mahendra had a tilt towards Hindu religion. He was a voracious reader of a number of religious scriptures and tried to interpret some of them.

Like any other human, Mahendra was also a victim of cupid's desire. His first wedding to Princess Indra Rajya Laxmi Devi Shaha was at the age of twenty, but he became a widower when he entered his thirtieth year. He was so much attached to her that in her absence a versatile poet grew in him. One perhaps agrees with Krishnasmurti when he writes, "Her (Princess Indra) charming silhoutte shaped itself in his poems. The alpha and omega of his poetry of Viraha Sringar was the Princess herself". (p. 27) Her qualities of "gentle understanding, tenderness and awareness of the future in the present" had a tremendous impact in his later life. After two years of agony in his mind, the Crown Prince got married again with Princess Ratna, the sister of the late Princess Indra. This was in accordance with the last wish of his first beloved. The author depicts Queen Ratna as a symbolic flower of Aryan womanhood. She is a curious admixture of traditional values and modernity.

Mahendra ascended to the throne of the Himalayan Kingdom, after the death of his father on 14th March, 1955, but the colourful coronation ceremony took place on 2nd May, 1956. Even in 1950, as a Crown Prince, he spearheaded a movement to bring about an end of Rana rule and to restore the real power to the King of Nepal. The miraculous escape of the entire royal family and taking shelter within the premises of Indian Embassy, has been beautifully described by the biographer.

In his justification of kingship in Nepal, Krishnamurti emphatically says that the people were patently fond of their king. The reason was that without the king, they find community life a crushing bore (p. 37). Every new king brought new hope for them. But this can possibly be explained in terms of the semi-feudal and prescriptive society that Nepal is. With the spread of liberal education to majority of the population and the influence of various ideologies in the surrounding regions, this utter devotion to the king will be loosening gradually.

King Mahendra staged a royal coup in December 1960, imprisoned all the political prisoners and nipped in the bud the parliamentary democracy in Nepal. He had nothing but contempt for the politicians, who,

according to him, were only power seekers and were taking Nepal towards complete ruination. Although the author makes frantic attempts to convince the readers that Mahendra was a staunch believer in democracy, in real practice, he (Mahendra) scornfully treated the democratic system as followed by the West. There are enough evidences in the volumes of his speeches. The author once again ends up in fallacy when he takes recourse to the historical traditions in Nepal in order to justify the king's doing away with parliamentary democracy. His outright comment that "parliamentary democrary was in flat opposition to the Panchayati Raj" (p. 42) is equally unconvincing to any rational observer. Then, let us take each of the arguments put forward by the author in his defence of King Mahendra's action. At the outset, he says that political parties in Nepal had not acquired the rudiments of organisation. But this argument can be refuted by saying that ten years (1950 to '60) was too short a period for the solid foundation of a political party. Before 1950, the Rana Prime Ministers had staunch opposition to any sort of political participation by the masses. The second argument that there was no political elite dedicated to political or social change is equally unsound. A basic question which can be asked is, "Was the atmosphere congenial for the growth of dedicated political elite ? Third argument, the parties turned into a hot bed of dissent and intrigues. Yes, but it is natural for any nascent democracy, especially when the society is purely traditional. Fourth, the leaders were fully integrated to some outside ideological establishment. That is true to some extent, but then how can one stop the political under-current of one country influencing another. This is an international phenomena. Sixth, personal and group selfishness ruled the roost. This is also understandable in a transitional stage. Seventh argument was that their (politicians') targets of hate were God and king and were contrary to historical experience. But then major political parties in a large number of countries believe in a secular ideology, so as to attract all sections of the society. Moreover it was for the king to command allegiance, rather than demand it. Next argument put forward by the author is that few of them could grasp the economic and sociological context of modern legislation. This is also understandable in a society where more than 90% of the population are illiterate, Finally, he argues that Nepali Congress brand of democracy was based upon "negative emotion, which exalted greed and assailed tradition, a tremendous effort of chicane and will, a sickening break-through" (p. 43). But then it was expected that the King should have created a healthy climate for bringing other political alternatives to the people, rather than taking over the role of a Savior himself. Did he really respect the voice of the people when he eliminated Parliamentary Democracy at a stroke ?

Panchayats provide the test for genuine democracy in a country.

Local problems can be solved at the local level through the process of decentralisation. But the late King of Nepal presumed that in existing political environment of his country, Panchayat democracy was possibly the best suited. That's why he provided, under the constitution of December 1962, a framework of the political system beginning from Gram Panchayat to Rastriya Panchayat. The system would not envisage the existence of any political parties. Krishnamurti tries to justify the Panchayat System by citing a number of evidences from the Vedic and Nepalese sources. According to him, it is a pattern of diffused social responsibility and that scheme of functional power units will live in contemporary history, as the greatest rationalisation of power structure (p.148). In his defence of the king's design the author writes, "Today in Nepal, democracy appears dormant, but democracy is very much alive" (p.150). However, he suggests certain basic structural changes in the civil service so as to gear up the national plan through the decentralisation process.

Now the viability of Mahendra regime can also be tested once we have a look at his external policy image. A poor landlocked country like Nepal cannot march towards progress without adequate international assistance. That's why the author very rightly comments that the most vital step in the economic development of Nepal would be to appoint a panel of experts representing the Aid Givers and the Government of Nepal in the spheres of irrigation, hydro-power, science-based industries, panchyat development and nation building (p·155). Because of the pragmatic policy followed by Mahendra, Nepal has been extensively aided by countries like India, U.S.A., Great Britain, China, U.S.S.R., Pakistan and Israel and international agencies like U.N.E.S.C.O., F.A.O., W.H.O., I.L.O., etc. However, Nepal, like Pakistan, is very sensitive whenever any sort of string is attached to the aid. The author echoes the national sentiment of the Nepalis while he writes: Aid turns into embarrassment when it is a lump of undigested and warring facts (p.160). Mahendra had extensive official tours to major part of the world, without any consideration of size, strength and ideology and therby gained many friends for Nepal. To all of them he affirmed that Nepal was no fence-sitter, thereby justifying the postive side of his policy of non-alignment. But as the author concedes, to most of the Americans, the king remained an enigma.

Although Mahendra had a deep understanding of religious scriptures of Hinduism, the author makes unfruitful attempts to euolize a set of political ideals of the King. So it is completely ruled out that Mahendra was a political thinker at all.

The two concluding chapters of this controversial biography project

Mahendra as a rebel, statesman and an innovator in history. As the captain of the resistance movement against the Ranas and as a political strategist during the royal coup, the king was unquestionably a rebel. However Krishnamurti overestimates the role of King Mahendra when he writes, "Nepal has passed through three definite phases: from crude autocracy to a democratic muddle and from parliamentary instability to the king's revolutionary leadership" (p. 228). Mahendra made attempts to intertwin Dharma and Panchayat in his administration, the former being supranational reality and the later an administrative infrastructure. One perhaps agrees with the author that the king revealed the greatest tact in his "buffer strategy with India and the oldest daughter of communism, China" (p. 290). In spite of being a Hindu King, he displayed significant political skill in befriending Pakistan and in following a political system strikingly similar to that of Ayubian basic democracy. The author, as a court historian, very emphatically says, "This well-loved King is a rebel with a cause and a great statesman with an insight" (p.296). Now King Mahendra has died and his successor King Birendra is determined to continue the political system introduced by his father. History alone will determine its utility to the highly impoverished land of Nepal. But at the moment, there are symptoms of occasional outbursts against the regime. Whatever may be the fate of "Panchayat Democracy" in Nepal, Mahendra will go down in history as a brave and dynamic ruler and was only comparable to King Prithvi Narayan Shah.

BOOK REVIEW

THE UNITED NATIONS SYSTEM : AN ANALYSIS

by Mahdi Elmandjra

(Published by Faber and Faber, London, 1973) pp 368, £6.00

UNITED NATIONS came into existence after the 2nd World War not only with a purpose to eliminate war, but to further an atmosphere of international peace and security. A quarter of a century has passed since then, but the international community is still tension-ridden. A number of regional wars, whether limited or total, have been fought since then. A vicious circle of cold war has engulfed the world. Millions of dollars are being spent by member states to build up huge military establishments. The rat race in the stockpiling of sophisticated arms and ammunitions continues. So sometimes a very pertinent question arises in one's mind as to the utility of the continued existence of U.N. as an instrument of peace. What are the systematic loopholes for which this organisation has become ineffective? Is there any way out for its better functioning within the international system? These are the basic questions to which the author seeks an answer. He has the special advantage of studying the working of the U.N. from a close quarter for more than a decade.

The author makes it very clear at the outset that his field of investigation is only confined to the developmental role of the U.N. although it is naturally linked with the political role. His study in his own words is an attempt "to identify and raise a number of subsidiary questions which may be of some relevance, in a limited area of international relations, to the understanding of international organisation as a regulatory and normative process, but not to propose any answer" (p. 18). He begins his research with the identification of U.N. Sub-system within the broader international system. Then he diagnoses the operational machinery through which that organisation functions. Coordination being a major problem faced by any huge organisation, obviously draws his attention. Especially he focuses his attention on the problems of coordination created by the multiplicity of a number of specialised agencies within the U.N. His next field of investigation is the acute financial problem faced by the organisation, especially the stress and strains caused due to the exercise of Financial Veto by the developed nations. In his concluding observation the author examines the adaptive capacity of the U.N. especially in the light of new changes in the social and political relationship. In recognising communication as a major problem the author writes, "The systematic purpose starts with international communication as the most basic input and ends with peace on the highest purposive output of the system" (p. 281).

The book is worth recommending to all students of international organisation. A unique part of this analysis is the scientific projection of a number of problems through charts and diagrams, which the author has

painstakingly included. But sometimes the reader gets an impression that the author has overquoted in the presentation of his thesis.

PKM

THE FOURTH ARAB ISRAELI WAR

by B.K. Narayan

(Published by Century Press, New Delhi, 1974) pp 116, Price Rs. 18.00

"THOSE who were anxious to belittle the achievements of the Arab armies by parading before the world the Israeli counter action were soon to be disillusioned. The Arab oil as a forceful weapon came into play. Arab unity also became more real and the overwhelming international support for the Arab cause crystallized more effectively."

This remark appearing in the introductory chapter would aptly sum up Colonel Narayan's little book on the last Arab - Israeli war, a war which has shaken world economy. The author does not claim to set to himself a specific aim except perhaps giving "a few glimpses" of the October 1973 War. He has certainly succeeded in achieving this aim.

The author is indeed eminently qualified to write on this subject of deep current interest—military, political and economic alike. His four-year tenure as India's Defence Attache accredited to Egypt, Syria, Lebanon, Cyprus and Yemen no less than his erudition Arabic, Persian and Urdu has enabled him to appreciate Arab thinking in depth. In a little over a hundred pages he has ably chronicled the events, discussed the tactics of the belligerents and furnished useful information on weapon systems of both sides.

The actious of the land forces have naturally found prominence in the work. The author has also chosen to devote a chapter exclusively to the role of Arab Navies. The Arab Air Forces have, however, received perfunctory mention. Also, considering the author's personal friendship with Yasser Arafat, one would have expected a more extensive study of the Palestine Commander's activities than what appears in chapter 11.

The book, however, seems to fall in the trap of a partisan attitude. Perhaps this is traceable to the conditioning of one's thinking largely by India's avowed support to the Arab cause. Thus even military historians tend to betittle Israeli achievements by default. The trap gets tighter with the long inventory of the "alibis" commonly posed by the "elements mentally unadjusted to countenencing Arab gains and Arab successes with equanimity". No serious effort has been made to dispute the so-called alibis. The very title of the second chapter viz "Half Arab Victory: Half Israeli Defeat" smacks of a patently partisan view. Mentioning Arab personalities with their full titles whilst omitting the marital status of Mrs Gold Meir (p 83) and the military rank of Moshe Dayan (p 28) and insertion of four photographs of Israeli prisoners in the prominent absence of illustrations of similar Arab misfortunes of war will also fail to go unnoticed by the discriminating reader.

The brilliant Foreword by Mr V.K. Krishna Menon is a treat in itself. With characteristic clarity and brevity Mr Menon traces the historical back-ground of the problem. His reference to Mahatma Gandhi's views, which have been quoted verbatim, is most apt as many of the younger generation may not be aware of them.

The material content of the book will interest soldiers and civilians alike particularly because of the crisp treatment of the questions of Suez canal and world economy, the oil crisis, African-Israeli relations and the prospects of peace discussed in the later chapters.

VJM

THE RETREAT FROM BURMA :

by Tony Mains

(Published by Palit & Palit, New Delhi, 1973) pp 151, Rs. 35.00

TONY Mains served in the 9th Gorkha Rifles during World War II and later in our Infantry School, Mhow. He has been a frequent visitor to India since then and is known to keep in touch with events in this country. Many must have read his article in the Military Digest of Oct. 72, entitled "India and Pakistan'—What now?" based on the 1971 Indo-Pakistan conflict. "The Retreat from Burma" is the first work of this author and as the dust jacket indicates, it is an Intelligence Officer's personal story of the retreat of British India Army from Burma, i.e. from Rangoon to Palel. It is written in the first person and is based on the officer's observations when he was in charge of a Field Security Section and a GSO-2/GSO-3 Intelligence. For the student of the Burma Campaign let this work not be misinterpreted as one on battlefield intelligence. It is really a personal record of the work of a Field Security Section dealing mainly with the security of Headquarters and rear installations. To that extent, it should not be read from the point of view of a campaign study but more of a personal story.

The author traces the history and development of intelligence in the Indian Army through his own experiences from the date he was posted as Junior Staff Officer in command of a small British Intelligence Section. There are some interesting observations in this book which conflict with the official history of the campaign in Burma and it is left to the reader to form his own judgement. A number of personalities emerge, among them Alexander, Stilwell and the Chinese Generals who participated in the earlier Burma Campaign. The evacuation of Rangoon is described in detail and the author has included a chapter on conclusions as a result of his experience. The main point he makes here is that throughout the long retreat, the Army, under Alexander, never lost its cohesion. Not much is said about the Japanese, particularly their attempts to subvert and to infiltrate and, as is the fasion, the author speaks about the Oriental races rather patronizingly!

In his foreword, Field Marshal Manekshaw has not committed himself and has stated that this book is primarily an account of events as seen and experienced by a comparatively junior officer and a small unit which he commanded. This publication must, therefore, be read in that light.

EDS

SECRET WARFARE : THE BATTLE OF CODES AND CIPHERS

by Bruce Norman

(Published by David and Charles, Newton, 1973) pp 187, Price £2.50

"FOR as long as there are people with secrets to hide, there will be a use for codes and ciphers to hide them—at least in the forseeable futur." This concluding remark of the author has been proved with remarkable clarity and lucidity in 175 pages of this account of secret communicatiohs over the human history dating back to four centuries BC.

The book traces the development of codes and ciphers from their earliest beginning in Greek times to the present day when it brings us to Russian espionage in the UK in 1971. The basic concept of transposition and substitution on which codes and ciphers are built is elucidated in facile text for the layman. Even as one reads through the early pages, there is a powerful urge to take a piece of paper and pencil in hand and try out building a code by oneself. The curiosity mounts as one delves deeper into the book and then the desire to read it at one strech becomes compulsive.

The solid history of cryptology starts only with the foundation of the English Secret Service under Elizabeth I. Whilst there was substancial development of this science, or art, in the ninteenth century, the more detailed accounts available relate to the period beginnig with World War I. The interception of the Zimmerman Telegram is the most outstanding achievement of code breakers, which expedited America's entry in the war. This is perhaps equalled only by the interception of the Japanese Government's message to the Ambassador in the US on the eve of the attack on Pearl Harbour. Each incident in these pages packed with suspense of the cloak and dagger type unfolds the modus operandi and techniques of machine ciphers, commercial codes, secret ink, microdots and a host of other methods and equipment employed by the agents. These accounts, however, call for deliberate and purposeful reading. Else much of the real fun of cryptology will be lost.

What makes the reading particularly interesting is that the spies and secret intelligence agents in the accounts are real people. Their real names have been given and the codes actually used by them have been reproduced only with slight variations to meet security requirements. The author has spoken to a number of the actors in this drama in real life. The extracts from his conversations, particularly those with the ninety-year old Admiral Sir William James, Head of British Naval Intelligence in World War I, Mrs. Friedman, America's top woman code breaker, Colonel Lanphier, the man who shot down Admiral Yamamato and Superintendent Smith of Scotland Yard who arrested the Krogers, top Russian spies in the UK, are thrilling reading.

Printed to conform to the high standards of David & Charles, the book embodies numerous maps, figures and illustrative tables which heighten the effect of the text.

The author aims at sharing the excitement and facination he himself

had when he "stumbled accidently into the strange world of secret intelligence." He gives the reader more than a fair share. One only wishes he had told the reader how he actually stumbled into this secret world.

A fascinating book.

VJM

THE EMBATTLED MOUNTAIN

by F.W.D. Deakin

(Published by Oxford University Press, London, 1971) pp 284, Price £3.75

ACCOUNTS of partisan wars never fail to create a romantic picture of adventure. The highlands of Montenegro in southern Yugoslavia which were the scene of Marshal Tito's heroic struggle against a vastly superior German force covers barely an area of 8000 square miles. In these mountains a small Yugoslav force of some four divisions valiantly fought the Axis and made Tito the legend he is today.

British General Headquarters in the Middle East had established contact with the Partisan Central Command in early May 1943. The latter considered "cooperation with Allies as logical" and asked for a liaison officer to be parachuted in Montenegro near Durmitor which was the heart of the area of operations. The author along with another officer and a small party was accordingly parachuted on 28 May.

The amply illustrated book recalls in vivid detail the entire story of the Partisan movement. It is largely based on the personal experiences and memories of the author, though he has found valuable material on the publications of the Historical Institute of the Yugoslav Peoples Army. The author's first meeting with Tito and the detailed accounts of numerous subsequent operations tend to give the book an almost autobiographical touch.

British commitments in Yugoslavia were complicated by two competitive claims on their support. King Peter of Yugoslavia had established in London as the Royal Yugoslav Government in exile and this Government had been recognized by the Russians. Colonel Mihailovic had organised a number of guerrilla bands loyal to the king in Western Serbia, whereas Yugoslav communists were operating independently. British efforts to get Russians to influence the Yugoslav communists to put themselves under Mihailovic as the nationalist leader had failed. At the same time the Cetniks who were the followers of Mihailovic had openly said that they would rather come to terms with the Germans than the communists. The complications arising out of these internal dissentions have been ably dealt with in Part II of the book.

The author was Fellow and Tutor in Modern History at Oxford before the War. He was also literary assistant to Winston Churchill. His competant handling of the chequered history of the Yugoslav resistance has made a valuable contribution to the literature on World War II.

VJM

INDIA'S PARATROOPERS

by K.C. Praval

(Published by Thomson Press, Delhi, 1974) pp 366, Price Rs. 60.00

INDIA'S Paratroopers by Major K.C. Praval deals with parachuting and paratroopers. The book which has just been released by Thomson Press (India) is the first book of its kind in this country. Beginning with the evolution of the parachute and airborne forces in world armies, it describes in simple, non-technical language the development of such forces in India. During World War II, many world-famous personalities were associated with the formation and employment of Indian parachute units: Sir Winston Churchill, Field-Marshal Lord Wavell, Field-Marshal Viscount Slim, Field-Marshal Sir Claude Auchinleck, General Sir Richard Gale, Lieut.-General F.A.M. Browning. *India's Paratroopers* gives first-hand account of battles fought by the paratroopers against crack Japanese troops to repel the latter's invasion of India in 1944, their part in the recapture of Rangoon and their mercy missions for Allied prisoners in Japanese custody.

After Independence, when Kashmir was invaded, parachute battalions were among the first troops to go to that state's rescue; the book gives graphic account of the battle for Srinagar, the relief of Punch, the advance to Kotli, the saving of Naoshera, the recapture of Jhangar and the two link-ups with Punch. One can read how an Indian Para Field Ambulance took part in an American airborne operation in Korea, and the part Indian paratroopers played in keeping the peace between the Arabs and the Israelis after the Suez flareup of 1956. The liberation of Goa is fully described; it was a parachute brigade that first entered Panjim. The operations against Pakistan in 1965 are fully covered and the book takes one right up to the end of the 14-Day War that General Yahya Khan declared against India on 3rd December 1971. The full facts about the parachute operation at Tangail on the road to Dacca from the north appear for the first time in print, and the commando operations in the western sector are adequately covered.

Besides the narration of the exploits of our parachute troops in various actions, the book has a good deal of information on the development of the airborne theory, which should be of interest to students of military history.

The book is well-illustrated and contains some fifty photographs besides thirty maps and a colour plate. And the foreword by Lieut.—General I.S. Gill, P.V.S.M., M.C., is very interesting.

INDIA PLANNING FOR INDUSTRIALIZATION

by Jagdish N. Bhagwati and Padma Desai

(Published by Oxford University Press, London, 1970) pp 537 Price £2.50.

THE book forms part of a series on industry and trade in some developing countries based on studies undertaken by Development Centre of the Organization for Economic Cooperation And Development. The

authors have produced a scholarly book on India's experience in industrialization. It covers planning for industrialization, industrization and trade policies since 1951.

The work commences with a brief review of enterprise and industrialization since the eighteenth century. The growth in this field since 1947 naturally forms the main subject matter and the period beginning with 1951 has been dealt with in greater detail as fomal five-year plans have been launched since then.,

The study arrives at some broad conclusions. The authors feel that Indian planning for industrialization has suffered from excessive attention to targets down to production level and a wasteful physical approach to their setting and implementation along with a generally ineffecient frame work of economic policies designed to ragulate the growth of industry. Neglect planning, combined with detailed regulation of such insufficiently determined targets, proved to be a negation of rational planning. The authors also contend that these inefficiencies were inevitable. "There is no escape from learning by doing."

The book is rich in factual detail presented in numerous tables which facilitate comparative study through the years. The effects of political structure, administration, foreign aid, licensing and import and export policies have been studied at great length. The study leaves little doubt that the performance of Indian economy has decelerated in the years since 1963/64. What the authors doubt is the capacity of the planners to push the performance levels back to their more satisfactory, if not impressive, standards between 1951 and 1964.

The authors also claim that none of the improvements advocated by them are incompatible with the basic objectives of a socialist society. That is of course their view. Talking about industrial licensing, for example, they feel, what is necessary is perhaps outright prohibition of a few non-priority industries or subjecting them to stiff excise duties. The rest would be left to market forces. Will this laissez-faire work in our economy?

The book is undoubtedly a comprehensive analysis of postwar Indian planning and economic policies in the field of foreign trade and industrialization.

VJM

THE HIMALAYAN JOURNAL, VOL. XXX, 1970

(Published by Oxford University Press, Bombay, 1971) pp 343, Price Rs. 25.00

HIMALAYAN range of mountains containing many of the highest peaks of the world, has drawn the attention of climbers from time to time. The volume under review contains a vivid and interesting account of the expeditions to a number of virgin peaks of the Himalayas by people of various nationalities.

The editor deserves special credit for his inclusion in the first part of his volume an extremely useful chapter about the necessity to keep oneself physically and mentally fit before undertaking any mountaineering expedition especially in the high altitude range. While emphasizing the importance of a perfect preconditioning of one's health in order to endure a harder life, Dr. Hans Kraus strongly feels that flexibility is particularly important for the skiers. According to Dr. Charles E. Huggins, well trained people well equipped with knowledge of the problems very seldom get frostbite. The inexperienced person poorly prepared and unaware of the problems is the one who gets serious frostbite (p. 46). He is of the opinion that frostbite can be easily avoided through "awareness, preparation, discipline and the attitude". While throwing some light on the psychological aspects of mountaineering, Dr. William F. Unsoeld holds the view that while choosing a leader or a team mate it was necessary to check his maturity of mind and team spirit. Mature, in his own words, "seems to have been closely allied with seeing him as free from inner turmoil or confusion or self-doubt, and as showing in his relationship a basic respect for the other's feelings and individuality" (p. 78).

In his categorisation of the various expeditions the editor begins with that part of the Himalayas which comes under Nepal's sovereignty. This part always draws the attention of maximum number of mountaineers. Eleven expeditions have been narrated in this part. Then comes the Indian part of the Himalayas where again the two bases are Uttar Kashi and Kulu Valley. Expedition stories in the Naga Parbat and the Karakoram range which come under Pakistani sovereignty have also been included. And finally that part of the Himalayas which come under Afghanistan has drawn the editor's attention. The readers can enjoy the vivid account of a good number of expeditions in the scenic Hindu Kush range.

On the whole this volume is a valuable asset to any library and a pleasant reading not only to the mountaineers but also to the layman. Another speciality is the inclusion of a good number of beautiful photographs and geographical maps of the Great Himalayas.

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ENGLISH LAW

by Kenneth Smith

(Published by Pitman Publishing, London, 1973) pp 630, Price £1.90

BECAUSE of the colonial legacy, British Law has been followed in some forms or other by a large number of countries. Rule of Law is one of the major cornerstones of the political system of England. That's why it is expected that people of Great Britain, in whatever profession they may be, must have a clear understanding of the basic points in Rule of Law. Even for an outside observer, it provides certain basic clues to the understanding of the legal system followed by countries with a liberal democratic set up. Keeping this view in mind Prof. Kenneth Smith and Denis J. Keenan of Mid-Essex Technical College and School of Art have taken the initiative to write this book. It is primarily meant as a text book for students other than those appearing for a law degree.

The authors have divided the entire text into nine chapters followed by a lengthy appendix containing a brief summary of some of the recent cases. In the introductory chapter they analyse the gradual development of English law since the time of Norman Conquest to the present day. Emphasizing on the common law of England, they hold the view that it is "a judge-made system of law, originating in ancient customs, which were clarified, extended and universalised by the judges, although that part of the common law which concerned the ownership of land was derived mainly from the system of feudal tenures introduced from Europe after Norman Conquest (p.3). An exclusive chapter is devoted to the organisational structure of the judiciary especially in the light of new changes introduced by the Courts Act of 1971. A novel feature under Sect. 4 (1) of the new Act is the establishment of Crown Court which forms a part of the Supreme Court. Another Chapter named 'Law in Action' throws light on the day to day legislation by the British Parliament, Delegated legislation and Judge-made laws. Commenting on the role played by British judges in the interpretation of law the authors point out that "judicial restriction of statute law may be to the advantage of the community" (p.8). But this may not always be true especially when the Government pilots certain progressive legislation for the wider benefits of common man, but opposed by conservative judges. Perhaps the most impressive Chapter in the book is the one which clarifies to the layman the entire conceptualisation of the British legal system. In the five concluding chapters the authors make an honest attempt to simplify the five basic divisions in the study of law. Here what is of interest to an outside observer is the special protection given to the British-born citizen and discrimination to the emigrants.

On the whole the book makes a pleasant reading to those who would not like to dive deep into the intricacies of English law.

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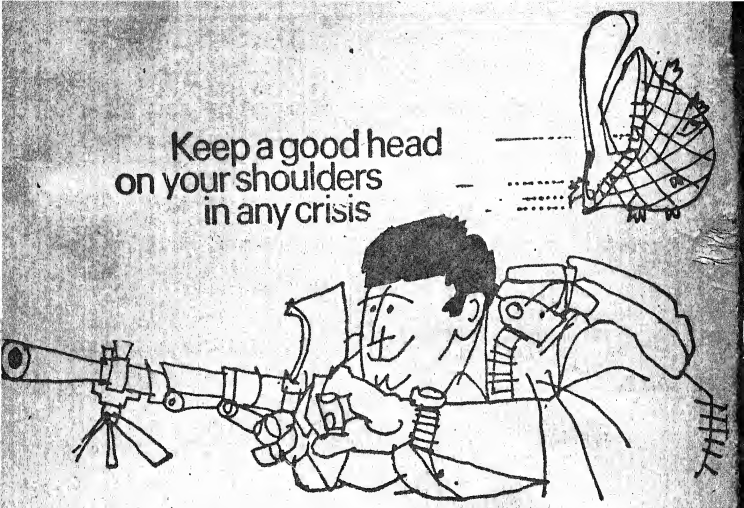

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